

LIBRARY
UNIVERSITY OF CALIFORNIA
DAVIS

State of California
THE RESOURCES AGENCY
Department of Water Resources

BULLETIN No. 94-9

LAND AND WATER USE IN
LOST RIVER-BUTTE VALLEY
HYDROGRAPHIC UNIT

Preliminary Edition

JULY 1965

HUGO FISHER
Administrator
The Resources Agency

EDMUND G. BROWN
Governor
State of California

WILLIAM E. WARNE
Director
Department of Water Resources

FOREWORD

This bulletin is one of the No. 94 series which present land and water use data for all watersheds of California. With the publication of this bulletin, these data become available for the entire North Coastal area.

Preparation of these bulletins is a fundamental step toward the full development of the State's water resources. This series of bulletins comprises the first phase of the Department's Statewide Planning Program, and will form a valuable reference for land and water use data throughout California. The second phase of this planning program uses these data in the determination of future water requirements of the various watersheds.

Much of the Lost River-Butte Valley Hydrographic Unit is a rocky volcanic plateau where the shallow soils provide a meager growth of timber and range. There are, in contrast, some valley areas of good deep soils with intensive agricultural development.

The surveys reported herein were initiated in 1958 with the location and inspection of surface water diversion systems which divert 10 acre-feet or more per year. The status of land use in the unit was mapped in 1959. In 1960, a survey of lands suitable for recreational development was also made.

Water from 148 of the 160 diversion systems described in the report was used for irrigation. A total of 131,800 acres, about 9 percent of the total area, was under irrigation; and 40,100 acres were dry-farmed in 1959. Outside the Lava Beds National Monument the unit includes about 1,600 acres which are well suited to development for recreation.

Future development of the waters of this unit for irrigation is limited by terms of the Klamath River Compact. This does not, however, preclude import from other basins, and the total future water requirements of this, as well as other areas of the State, must be determined in long-range water planning. The land and water use data in this series of reports will provide an essential basis in the determination of amounts of water which can be beneficially used in the various watersheds. These future water requirements will be compared with the local supplies available to define the areas of surplus or deficiency and thus indicate the projects which will most effectively develop the State's total water resources.

The bulletins of this series, besides serving this vital role in our Statewide Planning Program, are of great value in many local investigations both within the Department and by various other agencies.



Director of Water Resources

TABLE OF CONTENTS

	<u>Page</u>		
FOREWORD	iii		
ORGANIZATION, DEPARTMENT OF WATER RESOURCES NORTHERN BRANCH	vi		
CALIFORNIA WATER COMMISSION	vii		
ACKNOWLEDGMENT	viii		
	<u>Page</u>	<u>Table No.</u>	<u>Page</u>
CHAPTER I. INTRODUCTION	1		
Need and Authorization for the Investigation	1	1 Areas of Subunits	4
Scope of the Investigation	4	2 Descriptions of Surface Water Diversions	14
General Description of the Area	6	3 Monthly Records of Surface Water Diversions	31
CHAPTER II. WATER USE	9	4 Index to Surface Water Diversions . .	38
Surface Water Diversions	9	5 Land Use, 1959	51
Methods and Procedures	10	6 Irrigated Lands, 1959	53
Location System	11	7 Standards for Classification of Recreational Lands	64
Descriptions of Surface Water Diversions	12	8 Classification of Recreational Lands .	67
Diversion Measurements	29		
Imports and Exports	30		
Index to Surface Water Diversions . .	37		
Water Service Agencies	37		
CHAPTER III. LAND USE	45		
Historical Land Use	45		
Present Land Use	46		
Methods and Procedures	47		
Irrigated Lands	49		
Naturally High Water Table Lands . . .	52		
Dry-farmed Lands	60		
Urban Lands	60		
Recreational Lands	60		
Native Vegetation	61		
CHAPTER IV. CLASSIFICATION OF RECREATIONAL LANDS	63		
Scope of the Survey	63		
Methods and Procedures	64		
Recreational Land Classes	65		
CHAPTER V. SUMMARY	69		

TABLES

ILLUSTRATIONS

Illustration No.

1 Example of Land Use Delineated on Aerial Photo	50
---	----

APPENDIXES

Appendix

A Legal Considerations	73
B Land and Water Use in Modoc National Forest	93

PLATES

Plate No.

1 Area of Investigation	
2 Land and Water Use and Classification of Recreational Lands	
3 Water Service Areas	
4 Range Allotments in Modoc National Forest	

State of California
The Resources Agency
DEPARTMENT OF WATER RESOURCES

EDMUND G. BROWN, Governor, State of California
HUGO FISHER, Administrator, The Resources Agency
WILLIAM E. WARNE, Director, Department of Water Resources
ALFRED R. GOLZE', Chief Engineer
JOHN M. HALEY, Acting Assistant Chief Engineer

NORTHERN BRANCH

Gordon W. Dukleth Acting Branch Chief

This report was prepared
under the direction of

Robert E. Foley Chief, Special Investigations Section

by

C. Wesley York Senior Engineer

Assisted by

George K. Sato Assistant Land and Water Use Analyst

Price J. Schreiner Water Resources Technician I

Statewide Aspects of the
Coordinated Statewide Planning Program
are coordinated under the direction of the
Division of Resources Planning

Wesley E. Steiner Acting Division Engineer

Meyer Kramsky Chief, Statewide Investigations Branch

Ralph G. Allison . Acting Chief, Planning Investigations Section

CALIFORNIA WATER COMMISSION

RALPH M. BRODY, Chairman, Fresno

WILLIAM H. JENNINGS, Vice Chairman, La Mesa

JOHN W. BRYANT, Riverside

JOHN P. BUNKER, Gustine

IRA J. CHRISMAN, Visalia

EDWIN KOSTER, Grass Valley

JOHN J. KING, Petaluma

NORRIS POULSON, La Jolla

MARION R. WALKER, Ventura

-----O-----

WILLIAM M. CARAH
Executive Secretary

Orville L. Abbott
Engineer

ACKNOWLEDGMENT

The Department of Water Resources gratefully acknowledges the information furnished and the time and effort willingly expended by the various water users and residents of the Lost River-Butte Valley Hydrographic Unit and by agencies of the federal, state and local governments.

Particularly helpful was the assistance of Messrs. Ken Baghott, Sedgley Nelson and Cecil Pierce, Farm Advisors for Modoc and Siskiyou Counties, in arranging and conducting meetings for the review of certain data included herein.

CHAPTER I. INTRODUCTION

This bulletin presents data on land and water use in the Lost River-Butte Valley Hydrographic Unit. This hydrographic unit encompasses 2,315 square miles in Modoc and Siskiyou Counties. It comprises the California portion of the Upper Klamath River Basin, a semiclosed watershed lying to the east of the main Klamath River drainage area. The unit is bounded on the north by Oregon and on the south and east by the McCloud and Pit River watersheds of the Sacramento River Basin.

In addition to land and water use, this report includes data on lands suitable for water-using recreational developments. These data were gathered during the years from 1958 through 1960.

Need and Authorization for the Investigation

California, due to its rapid urban and agricultural expansion in areas of limited water resources and to its seasonal and long-term fluctuations of streamflow, is faced with a growing need for projects to store large quantities of water and to transport them over long distances to areas of deficiency. In planning the projects necessary to accomplish these objectives, without depriving the areas of origin of water needed therein, the future water requirements of all areas of the State must be predicted as accurately as possible.

In Bulletin No. 2, "Water Utilization and Requirements of California", June 1955, the State Water Resources Board published estimates of the future water needs of the State. Those

estimates, however, are now obsolescent and not sufficiently detailed for the current planning program.

Recognizing that additional information was necessary to protect the needs of areas of origin in large-scale water development projects, the 1956 Legislature authorized an investigation to determine the water resources and water requirements of the respective watersheds in the State. This legislation, under which these data have been prepared, is as follows:

"232. The Legislature finds and declares that in providing for the full development and utilization of the water resources of this State it is necessary to obtain for consideration by the Legislature and the people, information as to the water which can be made available for exportation from the watersheds in which it originates without depriving those watersheds of water necessary for beneficial uses therein. To this end, the Department is authorized and directed to conduct investigations and hearings and to prepare findings therefrom and to report thereon to the Legislature at the earliest possible date with respect to the following matters:

(a) The boundaries of the respective watersheds of the State and the quantities of water originating therein;

(b) The quantities of water reasonably required for ultimate beneficial use in the respective watersheds;

(c) The quantities of water, if any, available for export from the respective watersheds;

(d) The areas which can be served by the water available for export from each watershed; and

(e) The present use of water within each watershed together with the apparent claims of water right attaching thereto, excluding individual uses of water involving diversions of small quantities which, in the judgment of the Director of Water Resources, are insufficient in the aggregate to materially affect the quantitative determinations included in the report.

"Before adopting any findings which are reported to the Legislature, the Department shall hold public hearings after reasonable notice, at which all interested persons may be heard."

(Added by Stats. 1956 (Ex. Sess.), Ch. 61; amended by Stats. 1959, Ch. 2025.)

This report is one of a series being prepared pursuant to this legislation. The series, when completed for the whole State, will be of great value to local, state, and federal agencies for studies of many types relating to the utilization of land and water.

In this program, the Department not only develops the basic data as presented in this report, but utilizes these data in preparing the best possible current estimates of future water requirements to supersede those of Bulletin No. 2 and other earlier studies. These projections, together with hydrologic and water quality data on local water supplies, and estimates of the resulting excesses or deficiencies, will be published in a second series of bulletins, designated as the Bulletin No. 142 series.

For purposes of this investigation the State has been divided into twelve major hydrographic areas or provinces, which are shown on Plate 1. These areas, in turn, have been divided into hydrographic units. Each hydrographic unit comprises the watershed of an individual river or other workable subdivision of a hydrographic area. Each bulletin of the No. 94 series reports the land and water use for one hydrographic unit. In Southern California, however, the report areas are based on counties or other political units in many cases. A list of

reports on land and water use, both completed and in preparation, is included with Plate 1.

Scope of Investigation

The Lost River-Butte Valley Hydrographic Unit has been divided into seven hydrographic subunits according to its drainage pattern. These subunits are shown on Plate 1, and their areas listed in Table 1. The data collected in this investigation are tabulated by these subunits.

TABLE 1
AREAS OF SUBUNITS

Subunit	In Acres			In Square Miles		
	: Modoc	: Siskiyou	: Total	: Modoc	: Siskiyou	: Total
	: County	: County		: County	: County	
Antelope Creek	0	67,726	67,726	0	106	106
Boles	281,393	0	281,393	440	0	440
Butte Creek	0	110,731	110,731	0	173	173
Butte Valley	0	212,958	212,958	0	333	333
Clear Lake	299,555	0	299,555	468	0	468
Mount Dome	0	230,538	230,538	0	360	360
Tule Lake	<u>172,117</u>	<u>106,608</u>	<u>278,725</u>	<u>269</u>	<u>166</u>	<u>435</u>
TOTAL	753,065	728,561	1,481,626	1,177	1,138	2,315

For the Bulletin No. 94 series of reports, three field surveys are normally made in each hydrographic unit: water use, land use, and land classification. In the water use survey, surface water diversion systems are located and data pertaining to ownership, histories, water rights, purposes, and extent of

use are collected. The land use survey consists of mapping the existing developments or uses on the land as of a certain year. In the land classification survey, the lands are mapped as to their suitability for irrigated agriculture and for water-using recreational development.

In the Lost River-Butte Valley Hydrographic Unit, the surveys of water use and land use were conducted as of 1959. Descriptions of these two surveys, together with the data obtained, are presented in Chapters II and III, respectively. In 1960 a land classification survey was made, but it included only the recreational lands, as described in Chapter IV.

A significant difference between this bulletin and earlier ones of the No. 94 series is that the presentation has been simplified by reducing the introductory information and explanation to a minimum.

The tables of data presented in Chapters II, III, and IV constitute the main substance of the report. Appendixes A and B and Plates 2 and 3 are added for amplification. Appendix A contains a brief, nontechnical explanation of the various types of water rights and a list of the appropriative rights to waters of the unit on file with the State Water Rights Board. Appendix B describes a particular land and water use practice which prevails within the area of Modoc National Forest. Plate 2 consists of maps covering the unit and showing the water use, land use, and recreational land classification. Plate 3 shows the major water service areas of the unit. Plate 4 illustrates the special land and water use practice described in Appendix B.

The data were reviewed in preliminary form by individual water users and representatives of water agencies in the unit. Information provided by those parties has been incorporated with the original field data.

General Description of the Area

Topographically, the Lost River-Butte Valley Hydrographic Unit is a plateau area, lying almost entirely between 4,000 and 6,000 feet in elevation. The area in general slopes northward, with the elevations down to about 4,000 feet being along the Oregon state line. The elevations above 6,000 feet are located in the southwestern portion and include several scattered peaks, with some along the unit boundary as high as 8,000 to 8,500 feet.

The divide along the western edge of the unit is formed by a chain of volcanic peaks and cones of the Cascade range extending northward from Mt. Shasta. The rest of the unit, as part of the Modoc Lava Plateau, is largely an area of basaltic lava flows -- rough, rocky, and relatively barren. In contrast with this general picture are the basins of Tule Lake, Lower Klamath Lake, and Butte Valley, the first two of which extend northward into Oregon. These three virtually closed basins, with their smooth-lying and generally good soils, contain the bulk of the unit's farmland.

Precipitation in the unit is closely related to elevation. At the lower elevations in the three valley areas mentioned above the average annual rainfall is less than 10 inches. At the intermediate elevations comprising most of the unit the average rainfall is between 10 and 20 inches. Heavier precipitation

occurs along the unit's western and southwestern rim, with the higher elevations receiving up to 50 inches. About 80 percent of all precipitation below 4,900 feet occurs as snow, with the amount and percentage of snow increasing sharply above this elevation. The snowline on April 1 is normally at about this elevation. The average frost-free period, defined as the period between the last spring day and first fall day with minimum temperatures below 32°F., is 110 days in the vicinity of Tule Lake.

The earliest significant explorations in the Lost River-Butte Valley area were made by General John C. Fremont in 1843 and 1846. Without direct benefit from the mining boom to the west and south, the unit's development was negligible until about 1865, and remained slow until 1900. Since that time a pattern of alternate booms and slumps has persisted. The unit's population dropped from nearly 5,600 in 1950 to about 5,000 in 1960.

From the early years, agriculture has remained the major industry. The dollar value of agricultural production in 1961 was about 11.4 million for crops, mostly hay, barley, wheat, potatoes, and irrigated pasture; and 3.5 million from livestock, mainly beef cattle.

The second largest industry in the unit is timber production. From 1950 to 1960 the unit produced about 67 million board feet of timber per year. Most of the timber harvested in the unit is milled at points in the surrounding area. This fact limits to a considerable extent the resulting benefit to the unit's economy, since most of the labor required in the lumber industry is employed in milling and processing.

The only other significant source of income to the unit is recreation, based principally on hunting. Waterfowl shooting, which is permitted on portions of the several national wildlife refuges in the area, provides about 35,000 hunter-days each year. Deer hunting, particularly for the large mule species, also draws thousands of sportsmen to the unit. A scenic attraction which draws many visitors is the Lava Beds National Monument. In addition to lava formations, caves, and related volcanic features, this 72-square-mile area contains battlefields of the Modoc Indian War and archeologically significant petroglyphs of an unknown age.

The water resources of the unit are rather limited, consisting principally of Lost River and a number of creeks. Antelope and Butte Creeks and Lost River are the only gauged streams. Their average annual flows, as measured, are: Lost River, 119,000 acre-feet; Antelope Creek, 26,800 acre-feet; and Butte Creek, 18,500 acre-feet.

CHAPTER II. WATER USE

This chapter presents the results of the survey made in 1958 and 1959 of surface water diversions and their use in the Lost River-Butte Valley Hydrographic Unit. A total of 160 diversion systems were located in this survey. Detailed information concerning these diversions and their use is presented in Table 2.

The location of water wells and the measurement of their production are not within the scope of this investigation. Table 6, in Chapter III, however, lists the areas of all irrigated lands according to water source -- surface water diversions, ground water supply, or combinations of the two. Within the major portion of Tule Lake Irrigation District individual parcels of land were not identified with their sources of water. The primary source of water for this district is the Klamath Basin Project of the U. S. Bureau of Reclamation. Outside this district about 90 percent of the irrigated lands were served from surface water sources, and 10 percent from ground water.

Surface Water Diversions

In order to report the "present use of water" in the unit, as directed by the Legislature, it was first necessary to locate the surface water diversions. Those systems were located which apparently divert about 10 acre-feet or more of water per year. This minimum was adopted, in compliance with Paragraph (e) on Page 2, because it is the approximate amount

of water normally used to irrigate three acres, the smallest parcel which could be mapped and processed by the methods used.

Methods and Procedures

Aerial photographs covering the entire unit and showing irrigated lands, reservoirs, etc., were the principal means of locating diversions. A list of the appropriative water rights on file with the State Water Rights Board was also helpful. In the field, the investigation of various water-using activities and visible clues, such as powerlines and conduits, and the canvassing of residents, were also the means of locating some diversions. Data such as descriptions of the systems, uses served, water rights, histories, etc., were obtained through on-the-spot inspections and through interviews with the owners, operators, or other persons familiar with the various diversions. Some data thus obtained, particularly statements with regard to histories, were not verified since a search of title records and similar sources was not deemed to be within the scope of this investigation.

As each diversion was located in the field, the location was identified and marked on the aerial photograph covering the particular area. From the photograph the location was plotted on the corresponding U. S. Geological Survey quadrangle map. These plotted locations were then used to assign identifying location numbers to all diversions as explained in the following section. For systems which import water, the location indicated is that of the point of entry into the unit.

Systems which merely store water, as well as those which actually divert it from its natural course, were located. Those currently in use or under construction, and also those used within the previous five years, unless definitely abandoned, were included. Reservoirs located along and operated in conjunction with ditches and pipelines, although shown on Plate 2 were not considered as separate systems, and do not have location numbers assigned to them. Similarly, points at which diversion conduits intercepted minor intermittent streams, and apparently received less than 10 acre-feet of water in addition to the primary supply, were not considered as separate diversions.

A system by which field runoff and/or spill from a diverter's own operation was collected was not considered a diversion nor assigned a location number. Systems which re-diverted return flow from another water user's operation, however, were delineated and assigned location numbers.

To relate areas served to the respective individual diversions, the land use was delineated on the same photographs as the diversions. This association made possible determination of the acreages of irrigated lands as reported in Table 6. The diversion points, as well as the main conduits to the land served, are shown on Plate 2.

Location System

For purposes of identification, each surface water diversion is assigned a diversion location number by translating its plotted position on the aerial photograph to the U. S. Geological Survey quadrangle map of the area. Each location

number includes the numbers of the township, range, and section in the federal land survey system where the diversion is situated. The sections are subdivided into 40-acre plots (quarter-quarter sections), and these are indicated in each location number by a letter following the section number, as illustrated in the legend of Plate 2. For example, diversion D-44N/2W-24N1, shown on Sheet 17 of Plate 2 labeled "24N1", is in the southwest quarter of the southwest quarter of Section 24, Township 44 North, Range 2 West, Mt. Diablo Base and Meridian (MDB&M). Additional diversions in a 40-acre plot are distinguished by replacing the final number "1" with "2", "3", etc., as for diversion D-44N/2W-24N2, etc.

Descriptions of Surface Water Diversions

The physical descriptions, histories, water rights, and other information relating to surface water diversions are given in Table 2. Data in the table are arranged by the order of the location numbers within the respective subunits. Each location number is followed by the name of the diversion and/or owner; the source; the purposes served; the quantity of water diverted during 1959, if measured; and the extent of use, such as the number of acres irrigated, etc. If a diversion did not serve its usual purpose in the year of survey, this fact is noted in the "Remarks" column. The extent of domestic use is specified only when five or more connections are served. Stockwatering of less than 10 head of livestock is classified under domestic use. The extent of irrigation use is based on the 1959 land use survey described in Chapter III.

The nature and extent of existing rights pertaining to the water supply of an area are necessary in the determination of the total water requirements of the area. Table 2, therefore, includes information concerning the water rights on which the diversions are based. The type, quantity, and reference to official record, if known, are reported in the "Apparent Water Right" column. Most of the diversions in the unit are based on riparian rights; a smaller number divert under appropriative rights. A brief, nontechnical explanation of these and other types of water rights is given in Appendix A, together with a list of appropriative rights on file with the State Water Rights Board.

The determination of water rights under which the various diversions are made is based upon the best information available from the party interviewed, from files of the State Water Rights Board, and from other official records or sources available. Although this information meets the requirements for "apparent claims of water right" for the purposes of this investigation, its publication herein shall not be construed as evidence in confirmation of those claims. It should not, therefore, be used in the legal determination of water rights.

Detailed descriptions of the diversion systems, including dams, pumps, and main conduits, as well as any special features, are given in the "Description of System" column. The diversions are classified as gravity, pump, or storage, according to the following definitions:

Gravity diversion - A system by which water is taken from its natural course at a diversion structure and conveyed by gravity through a canal or pipeline to the area of use. Such a diversion may have a reservoir

DESCRIPTIONS OF SURFACE WATER DIVERSIONS

Location number and project sheet number	Diversion name and/or owner	Source	Water use in 1959			Apparent water right			Indicated amount of appropriation or first use	Description of diversion system	Remarks
			Purpose	Exam and method of use	Amount diverted in 1959	Type	Amount	Reference			
ANTELOPE CREEK SUBUNIT											
D-13W/14-101 (Sheet 21)	International Paper Company	Antelope Creek	Irrig. Stock.	320 acres by flooding 250 head*	Light	21qapum	--	--	1868	Gravity: wood dam 1 feet high, 5 feet long, with 2.5 miles of earth ditch.	Former owners: Garner Brothers, U. T. Martin, Long Bell Corp. Stockholders: D-13W/14-130A.
D-13W/14-101 (Sheet 21)	International Paper Company	Antelope Creek	Irrig. Stock.	60 acres by flooding 248½*	248½*	21qapum	--	--	1868	Gravity: wood dam 2 feet high, 5 feet long, with 0.4 mile of earth ditch.	Former owners: Garner Brothers, U. T. Martin, Long Bell Corp. Stockholders: D-13W/14-101. Municipal use is for town of Tennant.
D-13W/14-231 (Sheet 21)	Knud-Del Ranch	Antelope Creek	Irrig. Stock.	59 acres by flooding 90 head	270	21qapum	--	--	About 1865	Gravity: rock dam 2 feet high, 30 feet long, with 1.5 miles of earth ditch.	Former owner: George Haight.
D-13W/14-701 (Sheet 17)	John Wilson Lawender, Sr.	Antelope Creek	Irrig. Stock.	10 acres by flooding 40 head	689	Approp. 3.0 cfs Approp. 3.0 cfs	A-11801** A-15801**	--	About 1928	Gravity: earth and rock dam 3 feet high, 40 feet long, with 1.5 miles of earth ditch.	Former owner: I. H. Caldwell. Previously irrigated an additional 234 acres.
BOLES SUBUNIT											
D-13W/16-231 (Sheet 24)	Reservoir "N" Dave Weyer	Tributary to Boles Creek	Irrig. Stock.	2,605 acres by flooding* 2,500 head*	866*	Approp.	2,000 MI	Book 2 ^d Page 195	1912	Storage and gravity: earth dam 20 feet high, 1900 feet long, with 900-acre-foot reservoir and 14.5 miles of earth ditch.	Former owners: Leiland and Meyers, Castro and Suro, George Trautman, Will H. Perry. Water use indicated received from the reservoir and earth ditch: D-13W/16-231, D-14W/16-231, D-14W/16-231, and D-14W/16-231. Previously, irrigated an additional 364 acres.
D-13W/16-231 (Sheet 24)	Jackie Bate Stock Tank Dave Weyer	Tributary to Fairchild Meadow	Irrig. Stock.	(*)	Not meas*	(b)	--	--	About 1914	Storage: earth and rock dam 5 feet high, 200 feet long, with 150-acre-foot reservoir.	Supplements D-13W/16-231. Former owners and extent of use of combined supply reported thereunder.
D-14W/16-101 (Sheet 20)	Reservoir "N" Dave Weyer	Tributary to Fairchild Meadow	Irrig. Stock.	(*)	Not meas*	Approp.	10,000 MI	Book 2 ^d Page 218	1912	Storage: earth and rock dam 10 feet high, 800 feet long, with 1000-acre-foot reservoir.	Remarks for D-13W/16-231 apply.
D-14W/16-231 (Sheet 20)	Reservoir "N" Dave Weyer	Tributary to Boles Creek	Irrig. Stock.	(*)	Not meas*	Approp.	10,000 MI	Book 2 ^d Page 215	1912	Storage: earth dam 10 feet high, 200 feet long, with 1500-acre-foot reservoir.	Remarks for D-13W/16-231 apply.
D-14W/16-101 (Sheet 20)	Dave Weyer	Tributary to Boles Creek	Irrig. Stock.	(*)	Not meas*	(b)	--	--	1918	Storage: earth dam 8 feet high, 800 feet long, with 150-acre-foot reservoir.	In addition to the water use indicated in the preceding sheets, D-13W/16-231, D-14W/16-231, and D-14W/16-231. Former owners and extent of use of combined supply reported thereunder.

* See Remarks.

For lettered footnotes, see last page of table.

*** Reference numbers prefixed "A" identify applications to appropriate water, on file with State Water Rights Board.

DESCRIPTIONS OF SURFACE WATER DIVERSIONS

Location number Plate 2 sheet number	Diversion name and owner	Source	Water use in 1939			Apparent water right			Indicated date of appre- hension first use	Description of diversion system	Remarks
			Purpose	Extent and method of use	Amount diverted acre-feet	Type	Amount	Reference			
BOLES SUBUNIT (Continued)											
D-459/108-111 (Sheet 16)	Eager Basin Reservoir Eager O. and Ely A. House	Tributary to Fletcher Creek	Irrig. Stock.	5 acres by flooding 100 head	Not meas.	(b)	--	--	--	Storage; earth dam 6 feet high, 30 feet long, with 50-acre-foot reservoir.	Former owners: Eager, Dodge, W. M. Whitaker, Fritz, James Sharkey.
D-459/108-111 (Sheet 16)	Carlton O. and Ely A. House	Tributary to Fletcher Creek	Irrig. Stock.	(*)	Not meas.	Hiparian	--	--	--	Gravity; gated culvert pipe to short earth ditch.	Former owners: Louis Avastio, Mike Capurro, G. A. Bell, Whitaker, W.M. and Jessie Fritz, J. M. Judy, Dodge, James Sharkey. Former supply from D-459/108-111. Extent of use of combined supply reported thereunder.
D-459/108-111 (Sheet 16)	Carlton O. and Ely A. House	Tributary to Fletcher Creek	Irrig. Stock.	35 acres by flooding* 500 head	7 1/4	Hiparian	--	--	--	Gravity; direct diversion to 0.9 mile of earth ditch.	Former owners: Louis Avastio, Mike Capurro, G. A. Bell, W. Whitaker, W.M. and Jessie Fritz, J. M. Judy, Dodge, James Sharkey. Former supply from D-459/108-111 and -112.
D-459/108-111 (Sheet 16)	Carlton O. and Ely A. House	Boles Spring	Irrig. Stock.	(*)	Not meas.	Hiparian	--	--	--	Gravity; direct diversion to short earth ditch.	Supplements D-459/108-111. Former combined supply reported thereunder.
D-459/108-111 (Sheet 16)	Carlton O. and Ely A. House	Tributary to Fletcher Creek	Irrig. Stock.	(*)	Not meas.	Hiparian	--	--	--	Gravity; direct diversion to short earth ditch.	Remains for D-459/108-111 apply.
D-459/108-242 (Sheet 16)	West Black Rock Reservoir Modoc Nat. Forest	Tributary to Fletcher Creek	Stock.	(c)	Not meas.	(b)	--	1945	1945	Storage; earth and rock dam 15 feet high, 350 feet long, with 10-acre-foot reservoir.	
D-459/108-270 (Sheet 16)	Reservoir "G" Carlton O. and Ely A. House	Tributary to Fletcher Creek	Irrig. Stock.	145 acres by flooding 500 head	Not meas.	(b)	--	1911	1911	Storage; earth dam 8 feet high, 5900 feet long, with 710-acre-foot reservoir.	Former owners: G. O. Trausette, M. G. Lane Mortgage Co.
D-459/118-31 (Sheet 16)	Telephone Flat Reservoir Modoc Nat. Forest	Tributary to Fletcher Creek	Stock.	(c)	Not meas.	(b)	--	1930	1930	Storage; earth and rock dam 10 feet high, 350 feet long, with about 150-acre-foot reservoir.	Original diverter: P. A. Huffman.
D-459/108-257 (Sheet 12)	Timbered Ridge Reservoir Modoc Nat. Forest	Tributary to Boles Creek	Irrig. Stock.	38 acres by flooding*	Not meas.	(b)	--	1934	1934	Storage; earth and rock dam 4 feet high, 750 feet long, with 100-acre-foot reservoir.	Original diverter: P. A. Huffman.
D-459/108-101 (Sheet 12)	Blue Mountain Stock Tank Modoc Nat. Forest	Tributary to Fletcher Creek	Stock.	(c)	Not meas.	(b)	--	1937	1937	Storage; earth dam 5 feet high, 400 feet long, and reservoir with 70-acre surface.	Original diverter: P. A. Huffman.

^a See remarks.
For lettered footnotes, see last page of table.

TABLE 2 (Continued)

DESCRIPTIONS OF SURFACE WATER DIVERSIONS

Location number and/or sheet number	Diversion name and/or owner	Source	Water use in 1959			Apparent water right			Indicated date of appropriation or first use	Description of diversion system	Remarks
			Purpose	Extent and method of use	Amount diverted in acre-feet	Type	Amount	Reference			
MOLES SUBUNIT (Continued)											
D-46/108-252 (Sheet 12)	Carlton O. and Ethyl A. House	Tributary to Fletcher Creek	Irrig. Stock.	103 acres by flooding ^a 600 head ^a	Not meas.	(b)	--	--	--	Storage: earth dam 4 feet high, 400 feet long, with 600-acre-foot reservoir.	Former owners: Bager, Dodge, Whitaker, Fritts, Sharkey. The stock also water at D-46/108-361 and -361.
D-46/108-271 (Sheet 12)	Modoc Nat. Forest ^c	Tributary to Fletcher Creek	Irrig. Stock.	20 acres by flooding ^c	Not meas.	(b)	--	--	1945	Storage: earth and rock dam 3 feet high, 425 feet long, with 75-acre-foot reservoir.	
D-46/108-381 (Sheet 12)	Garden Stock Tank	Tributary to Fletcher Creek	Stock.	(c)	Not meas.	(b)	--	--	1947	Storage: earth dam 4 feet high, 705 feet long, and reservoir with 15-acre surface.	Original diverter: F. H. Huffman.
D-46/108-391 (Sheet 12)	Amazonia Reservoir Carlton O. and Ethyl A. House	Fletcher Creek	Irrig. Stock.	103 acres by flooding ^c 600 head	755 ^a	Approp.	400 ac 400 ac	A-1890 A-5312	1920	Storage and gravity: earth dam 10 feet high, 1,400 feet long, with 550-acre-foot reservoir and 1.5 miles of earth ditch.	Former owners: Louis Amswiler and Mike Quaker, W. Whitaker, Fritts, Dodge, James Sharkey, O. A. Bell, J. W. Judy. Water use indicated received supplementary supply from D-46/108-361.
D-46/108-361 (Sheet 12)	Carlton O. and Ethyl A. House	Tributary to Fletcher Creek	Irrig. Stock.	(*) (*)	Not meas.	(b)	--	--	--	Storage: earth dam 5 feet high 65 feet long, with 285-acre-foot reservoir.	Former owners and extent of use for Stockpounding reported under D-46/108-361. See also D-46/108-361 for irrigation use. Extent of use of combined supply reported thereunder.
D-46/108-363 (Sheet 12)	Carlton O. and Ethyl A. House	Tributary to Fletcher Creek	Irrig. Stock.	85 acres by flooding (*)	Not meas.	(b)	--	--	1922	Storage: earth and rock dam 7 feet high, 2500 feet long, with 150-acre-foot reservoir.	Remarks for D-46/108-361 apply.
D-46/118-711 (Sheet 12)	Dry Valley Reservoir Edgar Brothers, Inc.	Tributary to Fletcher Creek	Irrig. Stock.	100 acres by flooding 500 head	Not meas.	Approp.	200 ac	A-3931	1923	Storage: earth dam 8 feet high, 900 feet long, with 1500-acre-foot reservoir.	Former owners: Huffman, Buer.
D-46/118-251 (Sheet 12)	South Mountain Reservoir Modoc Nat. Forest ^c	Tributary to Fletcher Creek	Stock.	(c)	Not meas.	(b)	--	--	1930	Storage: earth dam 10 feet high, 900 feet long, with 700-acre-foot reservoir.	
D-47/92-201 (Sheet 6)	Sheele Swamp Hatch	Spring Tributary to Soles Creek	Irrig. Stock.	(*)	189 ^a	Upstream	--	--	Prior 1911	Gravity; direct diversion to 1.2 miles of earth ditch.	Supplements D-47/92-250. Former owners and extent of use of combined supply reported thereunder.
D-47/92-250 (Sheet 6)	Sheele Swamp Hatch	Spring Tributary to Soles Creek	Irrig. Stock.	659 acres by flooding ^c 600 head ^a	1555 ^a	Upstream	--	--	Prior 1911	Gravity; direct diversion to 1.8 miles of earth ditch.	Former owners: Judge Sheele, Jesse Charr, Mills Brothers. Water use indicated received supplementary supply from D-47/92-201 and -361.

* See remarks.
For lettered footnotes, see last page of table.

DESCRIPTIONS OF SURFACE WATER DIVERSIONS

Location number and project sheet number	Division name and/or owner	Source	Water use in 1959			Apparent water right			Indicated appropriation first use	Description of diversion system	Remarks	
			Purpose	Extent and method of use	Amount diverted in acre-feet	Type	Amount	Reference				
ROLES SUBUNIT (Continued)												
D-47M/92-31A1 (Sheet 6)	Steele Swamp Ranch	Tributary to Boiler Creek	Irrig. Stock.	(*)	436*	Riparian	--	--	Prior 1911	Gravity; earth dam 3 feet high, 100 feet long, with 1.2 miles of earth ditch.	Supplements D-47M/92-30A1. Former owners and extent of use of combined supply reported thereunder.	
D-47M/100-501 (Sheet 6)	Wild Horse Ranch	Wild Horse Creek	Irrig. Stock.	36 acres by flooding ^a	Not meas.	(b)	--	--	1933	Storage; earth dam 8 feet high, 110 feet long, with 80-acre-foot reservoir.	Original diverter: F. S. Huffman.	
D-47M/100-501 (Sheet 6)	Baseball Reservoir	Mosquito Creek	Irrig. Stock.	114 acres by flooding ^a	Not meas.	(b)	--	--	1933	Storage; earth dam 7 feet high, 150 feet long, and reservoir with 160-acre surface.	Original diverter: F. H. Huffman.	
D-47M/100-501 (Sheet 6)	Huffman Reservoir	Tributary to Rock Creek	Irrig. Stock.	32 acres by flooding ^a	Not meas.	(c)	--	--	1939	Storage; earth dam 10 feet high, 150 feet long, with 75-acre-foot reservoir.	Original diverter: F. H. Huffman.	
D-47M/100-501 (Sheet 6)	Pine Grove Reservoir	Tributary to Rock Creek	Irrig. Stock.	43 acres by flooding ^a	Not meas.	(b)	--	--	1934	Storage; rock and earth dam 5 feet high, 800 feet long, with 150-acre-foot reservoir.	Original diverter: F. H. Huffman.	
D-47M/100-501 (Sheet 6)	Jacks Reservoir	Mosquito Creek	Irrig. Stock.	512 acres by flooding ^a	657 500 shed	Approx. 1,400 of 315 af	A-594 A-936	--	1917	Storage and gravity; earth dam 10 feet high, 100 feet long, with 100-acre-foot reservoir with natural channel and earth ditches to area of use.	Former owners: Huffman, Baer.	
D-47M/100-501 (Sheet 6)	Mosquito Ranch	Tributary to Willow Creek	Irrig. Stock.	7 acres by flooding ^a	Not meas.	(b)	--	--	--	--	Storage; earth and rock dam 5 feet high, 400 feet long, and reservoir with 25-acre surface.	Original diverter: Jack King.
D-47M/100-501 (Sheet 6)	Round Willow Reservoir	Tributary to Fletcher Creek	Irrig. Stock.	12 acres by flooding ^a	Not meas.	(b)	--	--	Prior 1934	Storage; earth dam 5 feet high, 100 feet long, and reservoir with 10-acre surface.	Former owners: Huffman, Baer. Water use indicated received supplemental supply from D-47M/118-502.	
D-47M/118-501 (Sheet 6)	Hidart Brothers, Inc.	Willow Creek	Irrig. Stock.	59 acres by flooding ^a	35*	Riparian	--	--	About 1905	Gravity; direct diversion to 1.2 miles of earth ditch.	Supplements D-47M/118-501. Former owners and extent of use of combined supply reported thereunder.	
D-47M/118-501 (Sheet 6)	Hidart Brothers, Inc.	Willow Creek	Irrig. Stock.	(*)	93*	Riparian	--	--	About 1905	Gravity; earth dam 3 feet high, 6 feet long, with 0.9 mile of earth ditch.		
D-47M/118-501 (Sheet 6)	Mosquito Ranch	Tributary to Fletcher Creek	Irrig. Stock.	24 acres by flooding ^a	Not meas.	(b)	--	--	1935	Storage; earth dam 6 feet high, 185 feet long, and reservoir with 55-acre surface.		

* See Remarks.
For detailed footnotes, see last page of table.

DESCRIPTIONS OF SURFACE WATER DIVERSIONS

Location number and Plate 2 sheet number	Diversion name and/or owner	Source	Water use in 1959			Apparent water right			Indicated date of diversion prior to first use	Description of diversion system	Remarks
			Purpose	Extent and method of use	Amount diverted in acre-feet	Type	Amount	Reference			
MOLES SUBUNIT (Continued)											
D-47/28-1511 (Sheet 8) (Sheet 9)	Irvin C. Everly, et al.	Tributary to Fletcher Creek	--	--	Size	Approx.	600 ac ²	A-1474	1919	Gravity; rock dam 1 foot high, 20 feet long with 1.5 miles of earth ditch.	When diverting, this system exports water for storage in Beverly Reservoir and use in the Little River hydrographic unit.
D-47/28-1501 (Sheet 8)	Fesse Flat Reservoir, Roger Jessup Farms Company	Fletcher Creek	Irrig. Stock.	330 acres by flooding	Not meas.	(b)	--	--	--	Storage; earth and rock dam 5 feet high, 300 feet long.	
D-48/28-1501 (Sheet 4)	Four Mile Reservoir, Modoc Nat. Forest ^a	Four Mile Creek	Stock.	--	Not meas.	(b)	--	--	1934	Storage; earth and rock dam 10 feet high, 550 feet long with 50-acre-foot reservoir.	Initial diversers: P. Grohn and F. B. Burman.
D-48/28-1501 (Sheet 4)	Warm Springs Ditch, Warm Springs and Soas.	Warm Springs	Irrig. Stock.	17 acres by flooding, 500 head	95	Riparian	--	--	About 1890	Gravity; earth dam 1 foot high, 10 feet long with 0.5 mile of earth ditch.	Former owner: F. Grohn. These stock also water at D-48/28-1501, Clear Lake Shoshone.
D-48/28-1501 (Sheet 4)	Happy Valley Reservoir, Modoc Nat. Forest ^a	Tributary to North Fork Willow Creek	Irrig. Stock.	10 acres by flooding	Not meas.	(b)	--	--	1955	Storage; earth dam 6 feet high, 595 feet long and 100 feet wide with 19-acre surface.	
D-48/28-1501 (Sheet 4)	Bushman Flat Reservoir, Modoc Nat. Forest ^a	Tributary to North Fork Willow Creek	Irrig. Stock.	81 acres by flooding	Not meas.	(b)	--	--	--	Storage; earth dam 10 feet high, 140 feet long, and 100 feet wide with 33-acre surface.	
D-48/28-1501 (Sheet 4)	Good Valley Reservoir, Hight Brothers, Inc.	Tributary to North Fork Willow Creek	Irrig. Stock.	471 acres by flooding, 300 head ^a	Not meas.	(b)	--	--	About 1930	Storage; earth dam 4 feet high, 550 feet long, with 1600-acre-foot reservoir.	Former owner: Buchanan, Fred Burman. Water use indicated received supplementary supply from D-48/28-1501.
D-48/28-1501 (Sheet 4)	Hight Brothers, Inc.	Tributary to North Fork Willow Creek	Irrig. Stock.	(*)	72*	Riparian	--	--	--	Gravity; direct diversion to 1.5 miles of earth ditch.	Supplements D-48/28-1501. Former owner and extent of use of combined supply reported elsewhere.
BUTTE CREEK SUBUNIT											
D-48/28-1501 (Sheet 25)	Glady's Hart	Springs Tributary to Butte Creek	Irrig. Stock.	19 acres by flooding	Not meas.	Riparian	--	--	Prior 1900	Gravity; direct diversion to spreader ditches.	Former owner and livestock watered same as for D-48/28-1501.
D-48/28-1501 (Sheet 25)	Glady's Hart	Springs Tributary to Butte Creek	Irrig. Stock.	128 acres by flooding, 200 head	Not meas.	Riparian	--	--	1890	Gravity; rock dam 1' high, 10' long, with 1.3 miles of earth ditch.	Former owner: Miller.
D-48/28-1501 (Sheet 25)	Glady's Hart	Butte Creek	Irrig. Stock.	9 acres by flooding	Not meas.	Riparian	--	--	Prior 1900	Gravity; rock and earth dam with short ditch to area of use.	Former owner and livestock watered same as for D-48/28-1501.
D-48/28-1501 (Sheet 25)	Glady's Hart	Gold Spring	Irrig. Stock.	242 acres by flooding, 60 head	131 ^a	Riparian	--	--	About 1860	Gravity; earth dam 3' high, 5' long, with 0.8 mile of earth ditch. (2 ditches)	Former owner: Bray.

* See Remarks.
For further footnotes, see last page of table.

DESCRIPTIONS OF SURFACE WATER DIVERSIONS

Location number Plate 2 sheet number	Diversion name and owner	Source	Water use in 1959			Apparent water right			Indicated diversion prior to first use	Description of diversion system	Remarks
			Purpose	Extent and method of use	Amount diverted in acre-feet	Type	Amount	Reference			
D-13/24-301 (Sheet 21)	Rose Spring Ditch Ellis J. Louie	Rose Spring	Irrig. Stock.	(*) (*)	28*	Riparian	--	--	1872	Gravity; earth dam 3 feet high, 10 feet long, with 0.2 mile of earth ditch.	Former owner and extent of use for stockwatering reported under D-13/24-2801. Water use for irriga- tion reported under D-13/24-2801. Extent of use of combined supply reported thereunder.
D-13/24-1081 (Sheet 21)	Ellis J. Louie	Tributary to Butte Creek	Irrig. Stock.	37 acres by flooding* (*)	163*	Riparian	--	--	1872	Gravity; earth dam 3 feet high, 20 feet long with 1.1 mile of earth ditch.	Former owner and extent of use for stockwatering reported under D-13/24-2801. Extent of use for irrigation reported under D-13/24-2801. Extent of use of combined supply reported thereunder.
D-13/24-1071 (Sheet 21)	Ellis J. Louie	Butte Creek	Irrig. Stock.	(*)	401*	Riparian	--	--	1872	Gravity; wood dam 3 feet high, 20 feet long with 0.4 mile of earth ditch.	Supplements D-13/24-2801. Former owner and extent of use of combined supply reported thereunder.
D-13/24-1001	Double Spring Ellis J. Louie	Double Spring	Irrig. Stock.	(*)	92*	Riparian	--	--	1872	Gravity; earth dam 4 feet high, 20 feet long with 0.1 mile of earth ditch.	Remarks for D-13/24-301 apply.
D-13/24-1011 (Sheet 21)	Ellis J. Louie	Spring Tributary to Butte Creek	Irrig. Stock.	(*)	446*	Riparian	--	--	1872	Gravity; earth dam 4 feet high, 20 feet long with 0.6 mile of earth ditch.	Supplements D-13/24-2801. Former owner and extent of use of combined supply reported thereunder.
D-13/24-2801 (Sheet 21)	Ellis J. Louie	Butte Creek	Irrig. Stock.	(*)	792*	Riparian	--	--	1872	Gravity; earth dam 3 feet high, 20 feet long with 0.8 mile of earth ditch.	Remarks for D-13/24-301 apply.
D-13/24-2801 (Sheet 21)	Ellis J. Louie	Butte Creek	Irrig. Stock.	434 acres by flooding* 500 Bears	988*	Riparian	--	--	1872	Gravity; gravel fill dam 1 foot high, 20 feet long, with 0.6 mile of earth ditch.	Former Owner: Grenada Ranch Company, Escon Poudre Company, Louie Brothers, C. C. Balder, Elizabeth Poudre, Datre, Rose. Water use for irrigation in 1959 reported under D-13/24-2801. Extent of use of combined supply and -2801. The 500 stock also water at Mr. Louie's 13 other diversions.
D-13/24-2801 (Sheet 21)	Ellis J. Louie	Alder Creek	Irrig. Stock.	(*)	562*	Riparian	--	--	1872	Gravity; 12-inch pipe from creek into 300 feet of earth ditch.	Former owner and extent of use for stockwatering are reported under D-13/24-2801. Water use for irriga- tion supplements D-13/24-2801. Extent of use of combined supply reported thereunder.
D-13/24-2801 (Sheet 21)	Ellis J. Louie	Tributary to Alder Creek	Irrig. Stock.	26 acres by flooding* (*)	322*	Riparian	--	--	1872	Gravity; earth dam 3 feet high, 15 feet long with 0.5 mile of earth ditch.	Former owner and extent of use for stockwatering are reported under D-13/24-2801. Extent of use for irrigation received supplementary supply from D-13/24-2801.

* Use footcandle.
For lettered footcandle, see last page of table.

TABLE 2 (Continued)
DESCRIPTORS OF SURFACE WATER DIVERSIONS

Location number and sheet number	Diversion name and/or owner	Source	Water use in 1949			Apparent water right			Indicated date of appa- raption or first use	Description of diversion system	Remarks
			Purpose	Extent and method of use	Amount diverted acre-feet	Type	Amount	Reference			
BUTTE CREEK SUBUNIT (Continued)											
D-43/24-2601 (Sheet 21)	Ellis J. Louie	Alder Creek	Irrig. Stock.	(*)	1473*	Biaparian	--	--	1872	Gravity; earth dam 3 feet high, 10 feet long, with 0.3 mile of earth ditch.	Former owners and extent of use for stockwatering are reported under D-43/24-2601. Water use of irri- gation supplements D-43/24-2601. Extent of use of combined supply re- ported thereunder.
D-43/24-2701 (Sheet 21)	Ellis J. Louie	Tributary to Alder Creek	Irrig. Stock.	(*)	921	Biaparian	--	--	1872	Gravity; earth dam 1.5 feet high, 12 feet long, with 0.6 mile of earth ditch.	Former owners and extent of use for stockwatering reported under D-43/24-2601.
D-43/24-2701 (Sheet 21)	Ellis J. Louie	Pomeroy Creek	Irrig. Stock.	(*)	136*	Biaparian	--	--	1872	Gravity; direct diversion to 0.4 mile of earth ditch.	Remarks for D-43/24-2601 apply.
D-43/24-3081 (Sheet 21)	Ellis J. Louie	Tributary to Pomeroy Creek	Irrig. Stock.	(*)	182*	Biaparian	--	--	1872	Gravity; direct diversion to 0.3 mile of earth ditch.	Former owners and extent of use for stockwatering reported under D-43/24-2601. Extent of use for irrigation reported supplementary supply from D-43/24-2601, -2701, and -3081.
D-43/24-3621 (Sheet 21)	Ellis J. Louie	Springs Tributary to Pomeroy Creek	Irrig. Stock.	(*)	67	Biaparian	--	--	1872	Gravity; direct diversion to 0.3 mile of earth ditch.	Remarks for D-43/24-2601 apply.
D-43/24-4011 (Sheet 17)	Orr Lower Ditch Orr Brothers, Inc.	Butte Creek	Irrig.	73 acres by flooding	592	Biaparian	--	--	Prior 1880	Gravity; rock dam 2 feet high, 30 feet long, with 1.0 mile of earth ditch.	Former owner: Thomas Orr.
D-43/24-5311 (Sheet 17)	Southern Pacific Railroad Company	Butte Creek	Irrig.	89 acres by flooding*	1161*	Biaparian	--	--	1940	Gravity; rock dam 2 feet high, 13 feet long, with 0.1 mile of earth ditch.	Original diverter: John Ward. Water use indicated received supplementary supply from D-43/24-5311, and in previous years also from D-43/24- 5321 and -5331.
D-44/24-5011 (Sheet 17)	Southern Pacific Railroad Company	Butte Creek	Irrig.	(*)	220*	Biaparian	--	--	1940	Gravity; rock dam 2 feet high, 35 feet long, with 0.4 mile of earth ditch (two ditches).	Supplements D-44/24-5311. Original diverter and extent of use of combined supply reported thereunder.
D-44/24-5021 (Sheet 17)	Southern Pacific Railroad Company	Butte Creek	Irrig.	(*)	None*	Biaparian	--	--	1940	Gravity; direct diversion to 0.1 mile of earth ditch.	See D-44/24-5311 for former owners and extent of use supplemented in previous years by this diversion.
D-44/24-5031 (Sheet 17)	Southern Pacific Railroad Company	Butte Creek	Irrig.	(*)	None*	Biaparian	--	--	1940	Gravity; rock dam 2 feet high, 10 feet long, with 0.2 mile of earth ditch.	Remarks for D-44/24-5321 applies.
D-44/24-5041 (Sheet 17)	Eric R. Johnson	Butte Creek	Irrig. Stock.	(*)	864*	Biaparian	--	--	Prior 1900	Gravity; rock and wood dam 2 feet high, 30 feet long, with 0.8 mile of earth ditch.	Supplements D-44/24-5021. Former owners and extent of use of combined supply reported thereunder.

* See Remarks.
For lettered footnotes see last page of table.

DESCRIPTIONS OF SURFACE WATER DIVERSIONS

Location number and pier number Pile 2 sheet number	Diversion name and/or sewer	Source	Water use in 1959		Amount diverted in acre-feet	Apparent water right		Indicated date of application for diversion or first use	Description of diversion system	Remarks
			Purpose	Extent and method of use		Type	Amount			
BUTTE CREEK SUBUNIT (Continued)										
D-449/14-2001 (Sheet 17)	Erie R. Johnson	Butte Creek	Irrig. Stock.	209 acres by flooding. 300 head*	169*	Riparian	--	Prior 1900	Gravity: rock and wood dam 3 feet high, 30 feet long, with 1.0 mile of earth ditch.	Former owners: Augustine J. Soule, Ellis J. Soule. Water use indicated received supplementary supply from D-449/14-1981.
O-449/14-2001 (Sheet 17)	Orr Brothers, Inc.	Butte Creek	Irrig.	(*)	152*	Riparian	--	Prior 1880	Gravity: rock and wood dam 2 feet high, 30 feet long, with 1.5 miles of earth ditch.	Supplements D-449/14-2001. Former owner and extent of use of combined supply reported thereunder.
O-449/14-2002 (Sheet 17)	Orr Brothers, Inc.	Butte Creek	Irrig.	(*)	31*	Riparian	--	About 1928	Gravity: direct diversion to 1.3 miles of earth ditch. (2 ditches)	Remarks for D-449/14-2001 apply.
O-449/14-2001 (Sheet 17)	Orr Brothers, Inc.	Butte Creek	Irrig.	(*)	112*	Riparian	--	About 1927	Gravity: rock and wood dam 1 foot high, 20 long, with 1.3 miles of earth ditch. (2 ditches)	Remarks for D-449/14-2001 apply.
D-449/14-2001 (Sheet 17)	Orr Brothers, Inc.	Butte Creek	Irrig. Stock.	760 acres by flooding. 200 head	188*	Riparian	--	Prior 1880	Gravity: rock dam 3 feet high, 40 feet long, with 1.5 miles of earth ditch.	Former owner: Thomas Orr. Water use indicated received supplementary supply from D-449/14-2001, -2002, and -2003.
D-449/14-2001 (Sheet 17)	Gray House Ditch Walton and House Robinson	Butte Creek	Irrig. Stock.	31 acres by flooding. 20 head	104	Riparian	--	Prior 1927	Gravity: direct diversion to 0.2 mile of earth ditch.	Former owner: W. J. Gray.
D-449/24-2401 (Sheet 17)	Ray Soule	Butte Creek	Irrig. Stock.	(*)	247*	Riparian	--	About 1928	Gravity: rock and wood dam 1 foot high, 30 feet long, with 0.1 mile of earth ditch.	Supplements D-449/24-2404. Extent of use of combined supply reported thereunder.
D-449/24-2402 (Sheet 17)	Soule South Ditch Ray Soule	Butte Creek	Irrig. Stock.	(*)	704*	Riparian	--	1886	Gravity: rock and wood dam 2 feet high, 35 feet long, with 0.2 miles of earth ditch.	Remarks for D-449/24-2401 apply.
D-449/24-2403 (Sheet 17)	Soule Middle Ditch Ray Soule	Butte Creek	Irrig. Stock.	(*)	24*	Riparian	--	1880	Gravity: rock and wood dam 2 feet high, 10 feet long, with 0.8 mile of earth ditch.	Remarks for D-449/24-2401 apply.
D-449/24-2403 (Sheet 17)	Soule Upper North Ditch Ray Soule	Butte Creek	Irrig. Stock.	243 acres by flooding. 400 head*	86*	Riparian	--	1886	Gravity: rock and wood dam 2 feet high, 60 feet long, with 1.0 mile of earth ditch.	Former owner: S. H. Soule. Water use indicated received supplementary supply from D-449/24-2401, -2402, -2403, -2405, and -2406.
O-449/24-2405 (Sheet 17)	Ray Soule	Butte Creek	Irrig. Stock.	(*)	85*	Riparian	--	--	Gravity: direct diversion to 0.2 mile of earth ditch.	Remarks for D-449/24-2401 apply.
O-449/24-2402 (Sheet 17)	Ray Soule	Butte Creek	Irrig. Stock.	(*)	277*	Riparian	--	--	Gravity: direct diversion to 0.1 mile of earth ditch.	Remarks for D-449/24-2401 apply.

* See remarks.
For extended footnotes, see last page of table.

TABLE 2 (Continued)

DESCRIPTIONS OF SURFACE WATER DIVERSIONS

Location number Plate 2 sheet number	Division name and/or owner	Source	Water use in 1959			Apparent water right			Indicated date of approval prior to first use	Description of diversion system	Remarks
			Purpose	Extent and method of use	Amount diverted in acre-feet	Type	Amount	Reference			
BUTTE CREEK SUBUNIT (Continued)											
D-45N/24-24N (Sheet 17)	Snake Lower North Ditch Hay Soda	Butte Creek	Irrig. Stock.	(*)	601*	Biaparian	--	--	1886	Gravity; wood dam 3 feet high, 40 feet long, with 0.6 mile of earth ditch.	Remarks for D-45N/24-24N apply.
D-45N/24-24N (Sheet 13)	Ordo Davis	Horseshoe Creek	Irrig. Stock.	6 acres by flooding* 90 head*	45*	Biaparian	--	--	Prior 1900	Gravity; direct diversion to 0.1 mile of earth ditch.	Former owners: Dennis, H. L. Davis, I. S. Davis. Water use indicated received supplementary supply from D-45N/24-24N.
D-45N/24-24N (Sheet 13)	Ordo Davis	Spring Tributary to Horseshoe Creek	Irrig. Stock.	(*)	1*	Biaparian	--	--	Prior 1900	Gravity; direct diversion to 0.1 mile of earth ditch.	Supplement to D-45N/24-24N. Former owners and extent of use of combined supply reported thereunder.
D-45N/24-24N (Sheet 13)	International Paper Company Creek	Spring Tributary to Horseshoe Creek	Irrig. Stock.	5 acres by flooding 30 head	8	Biaparian	--	--	1958	Gravity; direct diversion to 0.1 mile of earth ditch.	Original diverter: Ordo Davis, lessee.
D-45N/24-24N (Sheet 13)	Davis Oaklin Ditch Ordo Davis	First Creek	Irrig. Stock.	16 acres by flooding 75 head	70	Biaparian	--	--	Prior 1900	Gravity; direct diversion to 0.5 mile of earth ditch.	Former owners: Dennis, H. L. Davis, I. S. Davis
BUTTE VALLEY SUBUNIT											
D-45N/14-14N (Sheet 13)	Ralph Lutz	Butte Creek	Irrig. Stock.	241 acres by flooding 275 head	1656	Approp.	20 MI 300 MI	Book 4 Page 289d Book 5 Page 356d	1880	Gravity; earth and wood dam high, 40 feet long, with 0.7 mile of earth ditch.	Former owner: James P. Russell.
D-45N/24-24N (Sheet 13)	Walter Robinson	Spring Tributary to Frabner Creek	Irrig. Power	401 acres by flooding* 300 head 30W	45*	Biaparian	--	--	Prior 1900	Gravity; direct diversion to 1.0 mile of earth ditch.	Former owners: Edgar Hall, Frabner, Bank of California, Nelson. Water use indicated received supplementary supply from D-45N/24-24N.
D-45N/24-24N (Sheet 13)	Walter Robinson	Spring Tributary to Frabner Creek	Irrig. Stock.	(*)	Not meas	Biaparian	--	--	Prior 1900	Gravity; rock dam 1 foot high, 25 feet long, with 0.5 mile of earth ditch.	Supplement to D-45N/24-24N. Former owners and extent of use reported thereunder.
D-45N/24-24N (Sheet 13)	High-Line Canal Butte Valley Irrigation District	Butte Creek	Irrig. Stock.	44 1/2 acres by flooding* --	7800*	Approp.	30 cfs 9000 af*	A-2234	1921	Gravity; concrete dam 3 feet high, 15 feet long, with 2.5 miles of earth ditch.	Water use indicated received supple- mentary supply from ground water. The 8000-acre-foot storage right is for water use indicated received for water ground water recharge together with Hayes Ranch Ditch. The 30 cfs storage right is for irrigation of additional 115 acres.
D-45N/24-12N (Sheet 13)	Hayes Ranch Ditch Butte Valley Irrigation District	Butte Creek	Ground- water recharge*	--	9400	Approp.	30 cfs* 8000 af* 1,000 MI*	A-2234 (c)	1921	Gravity; concrete dam 3 feet high, 15 feet long, with 0.5 mile of earth ditch.	The 8000-acre-foot storage right is for water use indicated received together with High-Line Canal. The 30 cfs right is exercised at D-45N/24-12N for irrigation.

* See remarks.
For detailed footnotes, see last page of table.

TABLE 2 (Continued)

DESCRIPTIONS OF SURFACE WATER DIVERSIONS

Location number Plate 2 Sheet number	Division name and owner	Source	Water use in 1959			Apparent water right			Indicated year of appropriation first use	Description of diversion system	Remarks
			Purpose	Extent and method of use	Amount diverted in acre-feet	Type	Amount	Reference			
BUTTE VALLEY SUBUNIT (Continued)											
D-668/24-501 (Sheet 9)	Meiss Ranch	Slough Tributary to Meiss Lake	Irrig. Stock.	(*)	None	Riparian	--	1944	Pump; gasoline engine, with 2.0 miles of earth ditch.	See D-668/24-501 for former owners and extent of use supplemented in previous years by this diversion.	
D-668/24-502 (Sheet 9)	Meiss Ranch	Tree Creek	Irrig. Stock.	(*)	15*	Riparian	--	1944	Gravity; direct diversion to 4.2 miles of earth ditch.	Supplements D-668/24-501. Former owners' stockwatering continued supply reported thereunder.	
D-668/24-501 (Sheet 9)	Meiss Ranch	Harris Creek	Irrig. Stock.	(*)	61*	Riparian	--	1944	Gravity; direct diversion to 3.5 miles of earth ditch.	Remarks for D-668/24-501 apply.	
D-668/24-501 (Sheet 9)	Meiss Ranch	Mudgrave Creek	Irrig. Stock.	(*)	569*	Riparian	--	1944	Gravity; direct diversion to 3.0 miles of earth ditch.	Remarks for D-668/24-501 apply.	
D-668/24-501 (Sheet 9)	Meiss Ranch	Tributary to Meiss Lake	Irrig. Stock.	3490 acres by flooding 1500 head	71*	Riparian	--	1944	Pump; 50-hp electric motor with 1.0 mile of earth ditch.	Former owners, J. C. Stevenson Sr., F. Horne Jr., Butte Valley Land and Irrigation Co., and others, received supplementary supply from D-668/24-502, -501, -503, and -504. Stockwatering was discontinued after World War II. See D-668/24-1281, -1341, and D-478/24-2681 when used. Previously irrigated an additional 135 acres.	
D-668/24-1281 (Sheet 9)	Meiss Ranch	Meiss Lake	Irrig. Stock.	175 acres by flooding (*)	219	Riparian	--	1944	Pump; 30-hp electric motor with 2.0 miles of earth ditch.	Former owners and extent of use for stockwatering reported under D-668/24-501. Diversion supplemented by ground water.	
D-668/24-1341 (Sheet 9)	Meiss Ranch	Tributary to Meiss Lake	Irrig. Stock.	(*)	None	Riparian	--	1944	Pump; 75-hp electric motor with 1.0 mile of earth ditch.	See D-668/24-501 for former owners and extent of use for stockwatering supplemented in previous years by this diversion. Previously irrigated 197 acres which received only groundwater in 1959.	
D-668/24-2082 (Sheet 9)	Juanita Lake Meiss Ranch	Siskel Creek	Irrig. Stock.	(*)	None	(b)	--	1949	Storage; earth dam 8 feet high, 570 feet long and 1.0 mile of earth ditch.	See D-668/24-501 for former owners and extent of use supplemented in previous years by this diversion.	
D-478/24-2682 (Sheet 5)	Meiss Ranch	Meiss Lake	Irrig. Stock.	(*)	664	Riparian	--	1944	Pump; gasoline engine with 1.0 mile of earth ditch.	See D-668/24-501 for former owners and extent of use for stockwatering supplemented in previous years by this diversion. Previously irrigated 954 acres.	
D-438/24-1082 (Export)	Martin E. Spenser	Wise Spring	--	--	Not meas.	Approp.	--	About 1889	Gravity; earth and rock dam with 0.5 mile of earth ditch.	Former owners, Thomas C. May, Basile, Export to State of Oregon.	
D-438/24-1081 (Partial export)*	Martin E. Spenser	Wise Spring	Irrig. Stock. Domestic	1 acre by flooding* 10 head (c)	Not meas.	Approp.	--	About 1889	Gravity; earth and rock dam with 0.5 mile of earth ditch.	Former owner; Thomas C. May, Basile, Same additional lands in Oregon.	

* See remarks.
For lettered footnotes, see last page of table.

TABLE 2 (Continued)
DESCRIPTORS OF SURFACE WATER DIVERSIONS

Location number Plate 2 sheet number	Diversion name and/or owner	Source	Water use in 1959			Apparent water right			Indicated date of operation or first use	Description of diversion system	Remarks
			Purpose	Extent and method of use	Amount diverted in acre-feet	Type	Amount	Reference			
CLEAR LAKE RUNNIT											
D-420/76-201 (Sheet 23)	Spaulding Reservoir (Modoc Nat. Forest)	Tributary to Dry Lake	Irrig. Stock.	51 acres by flooding ^a	Not meas.	(b)	--	--	Prior 1965	Storage; earth dam 4 feet high, 890 feet long, with 350-acre-foot reservoir.	
D-430/76-201 (Sheet 23)	Lockmore Reservoir (Modoc Nat. Forest)	Tributary to Dry Lake	Stock.	(c)	Not meas.	(b)	--	--	1933	Storage; earth and rock dam 10 feet high, 350 feet long and reservoir with 300-acre surface.	
D-430/76-201 (Sheet 23)	Modoc Nat. Forest ^c	Tributary to Dry Lake	Irrig. Stock.	51 acres by flooding ^a	Not meas.	(b)	--	--	Prior 1965	Storage; earth dam 7 feet high, 550 feet long, and reservoir with 70-acre surface.	
D-430/76-201 (Sheet 23)	Modoc Nat. Forest ^c	Tributary to Dry Lake	Irrig. Stock.	157 acres by flooding ^a	Not meas.	(b)	--	--	Prior 1965	Storage; earth dam 3 feet high, 240 feet long, and reservoir with 340-acre surface.	
D-440/76-201 (Sheet 20)	Dead Horse Flat Reservoir (Modoc Nat. Forest)	Tributary to Modoc Creek	Irrig. Stock.	308 acres by flooding ^a	Not meas.	(b)	--	--	--	Storage; earth dam 7 feet high, 750 feet long, with about 700-acre-foot reservoir.	
D-440/76-201 (Sheet 20)	Lost Valley Reservoir (Jave Meyer)	Tributary to Boulder Swamp	Irrig. Stock.	1007 acres by flooding ^a	Not meas.	(b)	--	--	About 1912	Storage; earth and rock dam 15 feet high, 425 feet long, with about 400-acre-foot reservoir.	Former owners: Leiland and Meyers, Castro and Bairo, Will B. Perry. Also supplies water for stock listed under D-430/98-128L, Bolea Summit.
D-470/76-201 (Sheet 7)	Big Johnson Dam Stanley Johnson	Tributary to Clear Lake	Irrig. Stock.	(*)	None	Approp.	500 af	A-15346	1959	Storage and gravity; earth dam 15.5 feet high, 1900 feet long with 110-acre-foot reservoir.	First used in 1960.
D-470/76-201 (Sheet 7) (Report)	Clear Lake Reservoir (U.S. Department of the Interior, Bureau of Reclamation)	Lost River	(c)	(c)	56,862 ^a	(b)	--	--	1910	Storage; earth and rock dam 200 feet high, 200 feet long, with 56,770-acre-foot reservoir.	
D-480/76-201 (Sheet 3)	William S. and Beverly A. Vian ^a	Antelope Creek	Irrig.	(*)	Not meas.	Riparian	--	--	Prior 1958	Pump; tractor powered, with direct connection to distribution system.	Former owners: Fred Hilton and Dan Cleary. Ownership changed to Beverly A. Vian in 1960. Irrigated 28 acres by flooding prior to 1959.
D-480/76-201 (Sheet 3)	William S. and Beverly A. Vian ^a	Lost River	Irrig.	60 acres by flooding	Not meas.	Riparian	--	--	Prior 1949	Pump; tractor powered, with 100 feet of 8-inch main.	Former owners and ownership change reported under D-480/76-201L.
D-480/76-201 (Sheet 3)	William S. and Beverly A. Vian ^a	Antelope Creek	Irrig.	(*)	Not meas.	Riparian	--	--	Prior 1958	Gravity; earth dam 2 feet high, 100 feet long, with 0.5 mile of earth ditch.	Former owners and ownership change reported under D-480/76-201L. Previously irrigated 58 acres.

* See remarks.
For detailed footnotes, see last page of table.

DESCRIPTIONS OF SURFACE WATER DIVERSIONS

Location number and/or owner	Source	Water use in 1959			Amount diverted in acre-feet	Apparent water right		Indicated date of diversion or first use	Description of diversion system	Remarks
		Purpose	Extent and method of use	Type		Amount	Reference			
CLEAR LAKE SUBUNIT (Continued)										
D-469/28-291 (Sheet 3)	Spring Tributary to Rock Creek	Irrig. Stock.	66 acres by flooding* 300 head	294*	Riparian	--	--	1890	Gravity; earth dam 1 foot high, 10 feet long, with 0.2 mile of earth ditch.	Former owners: Curt F. Grohs. Water use indicated received supplementary supply from D-469/28-292. Amount indicated received supplementary supply from D-469/28-291. Stock also water from D-469/28-291.
D-469/28-292 (Sheet 3)	Tributary to Rock Creek	Irrig. Stock.	(*)	(*)	Riparian	--	--	1890	Gravity; earth dam 3 feet high, 10 feet long, with 0.2 mile of earth ditch.	Supplements D-469/28-291. Former owners and extent of use of combined diversions included under D-469/28-291.
D-469/28-293 (Sheet 3)	Spring Tributary to Rock Creek	Irrig. Stock.	12 acres by flooding	83	Riparian	--	--	1890	Gravity; direct diversion to short earth ditches.	Former owners and extent of use for stockwater reported under D-469/28-291.
D-469/28-294 (Sheet 3)	Tributary to Rock Creek	Irrig. Stock.	81 acres by flooding* (*)	94	(b)	--	--	About 1890	Gravity; 1.4 miles of earth ditch.*	Location given is point at which water diverted and is reported under D-469/28-291. John Shumit.
MOUNT DOME SUBUNIT										
D-469/28-295 (Sheet 10)	Willow Creek	Irrig. Stock.	(*)	92*	Riparian	--	--	1863	Pump; 20 hp electric motor, with 300 feet of 12-inch pipe and 1.5 miles of earth ditch.	Supplements D-469/28-291. Former owners and extent of use of combined supply reported thereunder.
D-469/28-296 (Sheet 10)	Willow Creek	Irrig. Stock.	(*)	None*	Riparian	--	--	1863	Gravity; wood dam 3 feet high, 3 feet long, with 1.0 mile of earth ditch.	See D-469/28-291 for former owners and extent of use supplemented to previous years from this diversion.
D-469/28-297 (Sheet 10)	Spring Tributary to Willow Creek	Irrig. Stock.	65 acres by flooding* 300 head	222*	Riparian	--	--	1863	Gravity; earth dam 4 feet high, 300 feet long, with 2.5 miles of earth ditch.	Former owner: Van Brenners, Bill Davis, Jay and Harvey McCollister. Owners and extent of use indicated received supplementary supply from D-469/28-291 and -277/1, also formerly from D-469/28-291.
D-469/28-298 (Sheet 10)	Spring Tributary to Willow Creek	Irrig. Stock.	(*)	65	Riparian	--	--	1863	Gravity; direct diversion to 1.0 miles of earth ditch.	Remarks for D-469/28-291 apply.
D-470/28-301 (Sheet 5)	Spring Tributary to Lower Klamath Lake	Irrig. Stock.	(*)	25*	Riparian	--	--	1918	Gravity; direct diversion to 0.5 mile of earth ditch.	Supplements D-470/28-302. Initial diversion and extent of use of combined supply reported thereunder.
D-470/28-302 (Sheet 5)	Sheep Creek	Irrig. Stock.	149 acres by flooding* 300 head	Not meas.	Riparian	--	--	1903	Gravity; earth dam 5 feet high, 45 feet long, with 0.1 mile of earth ditch.	Supplements D-470/28-301. Initial diversion and extent of use of combined supply reported thereunder.
D-470/28-303 (Sheet 5)	Charles E. and Lucinda Cross	Irrig. Stock.	(*)	Not meas.	Riparian	--	--	1903	Gravity; wood dam 4.5 feet high, 50 feet long, with 0.4 mile of earth ditch.	Initial diversion: Charles Cross, who use indicated received supplementary supply from D-470/28-301.

See remarks.
For lettered footnotes, see last page of table.

TABLE 2 (Continued)
DESCRIPTORS OF SURFACE WATER DIVERSIONS

Location number and sheet number	Division name and/or owner	Source	Water use in 1959			Apparent water right			Indicated date of appro- priation or first use	Description of diversion system	Remarks
			Purpose	Extent and method of use	Amount diverted cfs-sec	Type	Amount	Reference			
MOUNT COLUMBIA SUBURBAN (Continued)											
D-47/18-211 (Sheet 5)	Hills Brothers	Spring tributary to Indian Lake	Irrig. Stock.	1150 acres by flooding 1325 head	3360*	(b)	--	--	Prior 1890	Storage and gravity; earth dam 10 feet high, 150 feet long, with 7.5 miles of earth ditch (two ditches).	Former owners: F. Dorris, Bank of San Francisco, G. Stewart, Jr., O. Stewart, Jr. Supplements D-47/28-2302. Extent of use of combined supply reported thereunder.
D-47/18-2301 (Sheet 5)	Perry A. Langer	Captain Jack Spring	Irrig. Stock.	(*)	338*	Riparian	--	--	1918	Gravity; direct diversion to 2.0 miles of earth ditch.	Supplements D-47/28-2302. Extent of use of combined supply reported thereunder.
D-47/18-2301 (Sheet 5)	Mary Porterfield	Spring tributary to Cottonwood Creek	Irrig. Stock.	1227 acres by flooding 1000 head	1766	Riparian	--	--	Prior 1920	Gravity; direct diversion to 4.0 miles of earth ditch.	Former owners: Murray, San Francisco Bank. Requested supplementary supply from D-47/18-211 and 2301. Previously irrigated an additional 31 acres.
D-47/18-2301 (Sheet 5)	Mary Porterfield	Spring tributary to Cottonwood Creek	Irrig. Stock.	(*)	1539*	Riparian	--	--	Prior 1920	Gravity; direct diversion to 3.0 miles of earth ditch.	Supplements D-47/18-2301. Former owners and extent of use of com- bined supply reported thereunder.
D-47/18-240/1 (Sheet 5)	Porterfield Reservoir Mary Porterfield	Spring tributary to Cottonwood Creek	Irrig. Stock.	(*)	438	(b)	--	--	Prior 1920	Storage and gravity; earth dam 15 feet high, 150 feet long, with 70- acre-foot reservoir and 1.4 miles of earth ditch (three ditches).	Remarks for D-47/18-2301 apply.
D-47/28-240 (Sheet 6)	Mary Porterfield	Willow Creek	Irrig. Stock.	(*)	None	Riparian	--	--	Prior 1904	Gravity; direct diversion to 0.5 mile of earth ditch.	See D-47/28-2301 for former owners in previous years by this diversion.
D-47/28-241 (Sheet 6)	Mary Porterfield	Willow Creek	Irrig. Stock.	150 acres by flooding 44 head	169*	Riparian	--	--	Prior 1904	Gravity; direct diversion to 0.5 mile of earth ditch.	Former owners: Tom Prior, Reese, William Sargent. Water use indi- cated formerly received supplementary supply from D-47/28-240.
D-47/28-241 (Sheet 6)	Irene Nicholson	Willow Creek	Irrig. Stock.	131 acres by flooding 49 head	368*	Riparian	--	--	Prior 1904	Gravity; direct diversion to 1.2 miles of earth ditch.	Former owners: Cobb McManus, John Thackara.
D-47/28-241 (Sheet 6)	Leo Fogle	Willow Creek	Irrig. Stock.	101 acres by flooding 100 head	198	Riparian	--	--	1915	Gravity; direct diversion to 0.7 mile of earth ditch.	Former owner: Evan Fogle
D-47/28-241 (Sheet 6)	John Thackara	Cottonwood Creek	Irrig. Stock.	237 acres by flooding --	2770*	Riparian	--	--	In 1880's	Gravity; earth dam 8 feet high, 15 feet long, with 1.8 miles of earth ditch.	Ownership passed to heirs in 1961
D-47/28-241 (Sheet 6)	Perry A. Langer	Cottonwood Creek	Irrig. Stock.	864 acres by flooding 200 head	1239*	Riparian	--	--	1918	Gravity; earth and rock dam 2 feet high, 25 feet long, with 2.0 miles of earth ditch.	Initial diverter Langer Mith Associ- ation. Water use indicated received supplementary supply from D-47/18-211 and 2301.
D-47/28-240 (Sheet 6)	Don O'Keefe	Willow Creek	Irrig. Stock.	259 acres by flooding 300 head	208*	Riparian	--	--	1890	Gravity; wood trestle 3 feet high, 4 feet long, with 1.4 miles of earth ditch (two ditches).	Former owners: Ous Mansfield, Don O'Keefe, Sr. Water use indicated received supplementary supply from D-47/28-240.

* See remarks.
For alternate footnotes see last page of table.

DESCRIPTIONS OF SURFACE WATER DIVERSIONS

Location number and Plate 2 sheet number	Division name and/or owner	Source	Water use in 1939				Apparent water right			Indicated date of appropriation or first use	Description of diversion system	Remarks
			Purpose	Extent and method of use	Amount diverted in acre-feet	Type	Amount	References				
MOUNT DOME SUBUNIT (Continued)												
D-479/22-1391 (Sheet 6)	Dan O'Keefe	Willow Creek	Irrig. Stock.	(*)	240*	Hiparian	--	--	1899	Gravity; wood baulgate 3 feet high, 4 feet long, with 0.2 mile of earth ditch.	Supplements D-479/22-1391. Former owner and extent of use of combined supply reported thereunder.	
D-479/22-2021 (Sheet 6)	G. W. Heigmann	Willow Creek	Irrig. Stock.	111 acres by flooding 110 head	309	Hiparian	--	--	1889	Gravity; wood dam 3 feet high, 3 feet long, with 0.8 mile of earth ditch.	Former owners: Jim Hayes and Henry Beale, Earl Brownell.	
D-480/12-2921 (Sheet 1)	John McKay	Sheepy Creek	Irrig. Stock.	323 acres by flooding 400 head	Not meas.	Hiparian	--	--	About 1916	Gravity; earth dam 6 feet high, 35 feet long, with 0.4 mile of earth ditch.	Water use indicated received supplemental supply from D-480/12-2921 and -2922. D-480/22-3101, -3101, and -3102.	
D-480/12-2921 (Sheet 1)	John McKay	Springs tributary to Sheepy Lake	Irrig. Stock.	(*)	Not meas.	Hiparian	--	--	About 1916	Gravity; direct diversion to 0.5 mile of earth ditch.	Supplements D-480/12-2921. Extent of use of combined supply reported thereunder.	
D-480/12-2921 (Sheet 1)	J. G. Allen, Sr.	Sheepy Creek	Irrig.	(*)	Not meas.	Hiparian	--	--	1900	Gravity; earth dam 7 feet high, 35 feet long, with 0.8 mile of earth ditch.	Supplements D-480/12-2921. Former owners and extent of use of combined supply reported thereunder.	
D-480/12-2922 (Sheet 1)	John McKay	Sheepy Creek	Irrig.	(*)	Not meas.	Hiparian	--	--	About 1916	Gravity; earth dam 7 feet high, 35 feet long, with 0.2 mile of earth ditch.	Supplements D-480/12-2921. Extent of use of combined supply reported thereunder.	
D-480/12-2923 (Sheet 1)	Charles E. and Lucinda Cross	Sheepy Creek	Irrig.	(*)	Not meas.	Hiparian	--	--	1903	Gravity; earth dam 5 feet high, 25 feet long, with 0.1 mile of earth ditch.	Supplements D-480/12-2921. Extent of use reported thereunder.	
D-480/12-2923 (Sheet 1)	Lucinda Cross	Sheepy Creek	Irrig.	(*)	Not meas.	Hiparian	--	--	1903	Gravity; earth dam 7 feet high, 35 feet long, with 300 feet of earth ditch.	Supplements D-480/12-2921. Extent of use reported thereunder.	
D-480/12-3581 (Sheet 1)	J. G. Allen, Sr.	Sheepy Creek	Irrig. Stock.	375 acres by flooding 200 head	Not meas.	Hiparian	--	--	1900	Gravity; earth dam 5 feet high, 30 feet long, with 2.0 miles of earth ditch.	Former owners: Elmer Chandler, Allen Brothers. Water use indicated received supplemental supply from D-480/12-3581.	
D-480/12-3581 (Sheet 1)	Leo Pagle	Sheepy Creek	Irrig. Stock.	139 acres by flooding Unknown	Not meas.	Hiparian	--	--	About 1900	Gravity; earth dam 5 feet high, 45 feet long, with 0.2 mile of earth ditch.	Former owners: W. Bray, Gus Madenorth, and Shelly. Water use supplemented by D-480/12-3581.	
D-480/12-3581 (Sheet 1)	Leo Pagle	Sheepy Creek	Irrig. Stock.	(*)	Not meas.	Hiparian	--	--	About 1900	Gravity; earth dam 5 feet high, 45 feet long, with 0.5 mile of earth ditch.	Supplements D-480/12-3581. Former owners and extent of use of combined supply reported thereunder.	
D-480/12-3681 (Sheet 1)	Charles E. and Lucinda Cross	Springs tributary to Sheepy Creek	Irrig.	319 acres by flooding	371*	Hiparian	--	--	1903	Gravity; earth dam 4 feet high, 13 feet long, with 1.3 miles of earth ditch.	Water use indicated received supplemental supply from D-480/12-3681 and -2922.	

* See remarks.
For listed footcates, see last page of table.

TABLE 2 (Continued)
DESCRIPTORS OF SURFACE WATER DIVERSIONS

Location number sheet number	Diversion name and owner	Source	Water use in 1959			Apparent water right		Indicated date of diversion provision or first use	Description of diversion system	Remarks
			Purpose	Extent and method of use	Amount diverted acre-feet	Type	Amount Reference			
MOUNT DOME SUBUNIT (Continued)										
D-43W/22-31M (Sheet 2)	John McKay	Spring tributary to Sherry Lake	Irrig. Stock.	(*)	(*)	Riparian	--	--	Gravity: direct diversion to 0.5 mile of earth ditch.	Supplements D-43W/12-201. Extent of use of combined supply reported there- after. Diversion included with D-43W/22-31M.
D-43W/22-31M (Sheet 2)	John McKay	Spring tributary to Sherry Lake	Irrig. Stock.	(*)	431*	Riparian	--	--	Gravity: direct diversion to 0.5 mile of earth ditch.	Reported amount diverted also includes amount from D-43W/12-201. This total supplements D-43W/12-201. Extent of use of combined supply reported thereunder.
D-43W/22-31M (Sheet 2)	John McKay	Spring tributary to Sherry Lake	Irrig. Stock.	(*)	(*)	Riparian	--	--	Gravity: direct diversion to 0.5 mile of earth ditch.	Remarks for D-43W/22-31M apply.
TULE LAKE SUBUNIT										
D-47W/52-271L	Michael H. and Mary L. Payne	Tributary to Tule Lake	Domestic Stock.	(*)	Not meas.	Approp.	1000 MI	Book 2 ^d	Storage: earth dam 8 feet high, 32-acre-foot reservoir.	Former owners: Peter and Mauritz Bonde and M. F. and Alice Oppock.
D-43W/52-14C (Imports)	Van Brenner Ditch Company	Upper Klamath Lake*	Irrig. Stock.	--	Not meas.	(*)	--	--	Gravity: 2.5 miles of earth ditch.	Location given is point at which water enters diversion. Diversion water is purchased by contract with U.S. Bureau of Reclamation.
D-43W/52-20M (Sheet 3)	Loyal H. and Vernon R. Lowmoss	Ball Springs Tributary to Klamath Creek	Irrig. Stock.	(*)	None	Approp.*	0.5 cfs 75 af	A-10078	Storage and gravity: earth dam 15 feet high, 400 feet long, with 6-acre-foot reservoir and 0.1 mile of earth ditch.	Previously irrigated 37 acres and watered 500 head of stock. Amount diverted is supplemented by ground water. Water right held in name of Lowmoss Lumber Company.
D-43W/52-26M (Sheet 3)	Frank J. Sullivan, Jr.	Tributary to Tule Lake	Irrig. Stock.	(*)	Not meas.	Approp.	90 af	A-12659	Storage: earth dam 12 feet high, 50-acre-foot reservoir.	Supplements D-43W/52-26Q1. Former owner: J. J. Sullivan. Diversion supply reported thereunder.
D-43W/52-26Q1 (Sheet 3)	Frank J. Sullivan, Jr.	Tributary to Tule Lake	Irrig. Stock.	(*)	Not meas.	Approp.	15 af 60 af	A-8295 A-12840	Storage and gravity: earth dam 12 feet high, 125 feet long, with about 60-acre- foot reservoir and 1.2 miles of earth ditch.	Former owners: Bill Hebbesen, Kowalski. Water use receives supplementary supply from D-43W/52-26M and -26Q1. Combined supply previously irrigated 1 1/2 acres by flooding.
D-43W/52-35M (Sheet 3)	Frank J. Sullivan, Jr.	Tributary to Tule Lake	Irrig. Stock.	(*)	Not meas.	Approp.	50 af 50 af	A-12657 A-12828	Storage and gravity: earth dam 12 feet high, 125 feet long, with 100-acre-foot reservoir and 1.5 miles of earth ditch.	Remarks for D-43W/52-26M apply.

* See remarks.

a For special details about this measurement, see entry for this diversion in Table 3.
b For details about the water right, see entry for this diversion in Table 3.
c For further information about this irrigation practice, see Appendix B, "Land and Water Use in Nevada National Forests",
d Shady County records.
e Judgment in the case of Churchill vs. Lurie, filed Jan. 5, 1900, directed the defendant to allow "one thousand inches of water,
measured under a four-inch pressure, to flow down to the lower ranch."

on the stream but the capacity is small compared with the amount of water diverted and provides no significant carryover seasonal storage.

Pump diversion - A system by which water is pumped from its natural course through a pipeline to the area of use or to a gravity conduit located at a higher elevation.

Storage diversion - A system consisting of or including a surface reservoir having significant carryover storage within each season or from season to season.

Systems not exclusively of one of these basic types are listed as combinations of those types which best describe them.

The "Remarks" column contains such information as the names of former owners, known changes of ownership after the year of study, and further details explaining entries in the other columns.

Diversion Measurements

Quantities of water diverted were measured, where feasible, to provide additional basic data concerning water use which will be helpful in determining water requirements of the unit. These measurements were made on 74 of the 160 diversions described in Table 2.

The measured quantities do not necessarily represent average annual quantities, since during any single year the quantity diverted is influenced by precipitation during the growing season and the available streamflow. Causes other than weather and available water supply, such as economic factors, may also affect the degree to which any diversion record is typical of normal operating conditions. Assessment of these factors is outside the scope of this report. The diversion

quantities reported herein generally represent the actual amount of water taken from the respective sources, and therefore include recoverable and irrecoverable losses incidental to the intended use.

Records of Surface Water Diversions. Detailed results of the measurement program are reported in Table 3. For each diversion measured, this table gives the purposes served, the point and method measurement, and the monthly and annual quantities diverted. Notations in the "Use" column regarding the irrigation period indicate the overall period of irrigation, but not necessarily that daily or continuous irrigation was practiced throughout the period. Where monthly data were sufficiently reliable, the quantities are shown. When the quantity diverted during a month is known to have been zero, it is so indicated. The measurements are designated as estimates when only incomplete or somewhat uncertain data could be obtained.

Imports and Exports

Among the diversion systems reported, three are for export of water from the unit. Two of these are privately owned, and the other is Clear Lake Reservoir, the largest storage unit of the U. S. Bureau of Reclamation's Klamath Project which provides water for use in both Oregon and California. In 1959, release from this reservoir totaled 58,860 acre-feet.

Two private systems for import are also listed, one a ditch from a privately owned diversion and one which imports water purchased from the U. S. Bureau of Reclamation. The Klamath Project also delivers large quantities of water across the state

TABLE 3
MONTHLY RECORDS OF SURFACE WATER DIVERSIONS

Location number	Diversion name of owner	Use	Point of measurement or estimate	Method of observation and calculation	Amount diverted, in acre-feet												Remarks	
					Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec		Total
ANTELOPE CREEK SUBUNIT																		
0-43W/1-1-1-1	International Paper Company	Irrigation and stock-watering	On source, above and below intake	Water stage recorder and depth-flow relationship	-----	-----	-----	546 ^a	1903	1,682	348	127	201	214	444	239	4,901 ^a	Reported amount diverted included an unacknowledged amount of 8311.
0-43W/1-1-1-2	International Paper Company	Irrigation, stock-watering, and domestic	50 feet below intake	Staff gage and depth-flow relationship	-----	-----	-----	204	427	474	240	196	198	220	226	157 ^a	4,476 ^a	
0-43W/1-1-2-1	Ken-Dei Ranch	Irrigation and stock-watering	150 feet below intake	Staff gage and depth-flow relationship	-----	-----	-----	-----	39 ^a	56	30	23	21	29	31	39 ^a	250 ^a	
0-44W/1-1-1-1	John Wilson Landreth, Jr.	Irrigation and stock-watering	150 feet below intake	Staff gage and depth-flow relationship	-----	-----	-----	227 ^a	379	434	0	0	0	0	0	0	629 ^a	
BOULE SUBUNIT																		
0-43W/9-1-1-1	reservoir #7 ^a	Irrigation and stock-watering	1 mile below intake	Receiver and depth-flow relationship	0	0	0	0	218 ^a	474	204	42 ^a	9	0	0	0	806 ^a	
0-43W/10-1-1-1	Arilton W. and Lloyd A. Ross	Irrigation 1/15/59 - 9/1/59 and stock-watering	40 feet above area of use	Staff gage and depth-flow relationship	0	0	0	0	13 ^a	23	14	5 ^a	3	0	0	0	74 ^a	
0-43W/10-1-2-1	Aravindo reservoir	Irrigation 1/15/59 - 12/1/59 and stock-watering	At outlet	Outlet capacity and operation schedule	0	0	0	0	95 ^a	190 ^a	190 ^a	160 ^a	0	0	0	0	735 ^a	
0-43W/9-1-2-1	Stable Swamp dam	Irrigation 1/15/59 - 12/1/59 and stock-watering	10 feet below intake	Staff gage and depth-flow relationship	0	0	10 ^a	28 ^a	29 ^a	48 ^a	28 ^a	25	23 ^a	12 ^a	3	0	189 ^a	
0-43W/9-1-2-2	Stable Swamp dam	Irrigation 3/15/59 - 12/1/59 and stock-watering	150 feet below intake	Staff gage and depth-flow relationship	0	0	132 ^a	268 ^a	277 ^a	268 ^a	45 ^a	143 ^a	268 ^a	234 ^a	0	0	1,155 ^a	
0-43W/9-1-3-1	Stable Swamp dam	Irrigation and stock-watering	At intake	Staff gage and depth-flow relationship	37	33	37	30	37	36	37	31	36	37	36	37	430	
0-43W/10-1-3-1	Jones reservoir	Irrigation and stock-watering	1/4 mile below dam	Staff gage and depth-flow relationship	0	0	0	0	120	465	47	197	48	0	0	0	1,057	
0-43W/10-1-3-2	Stuart reservoir, Inc.	Irrigation 1/20/59 - 12/1/59 and stock-watering	15 feet below intake	Staff gage and depth-flow relationship	0	0	44 ^a	48 ^a	47 ^a	43	1	20	39	67 ^a	65 ^a	0	54 ^a	
0-43W/10-1-3-3	Stuart reservoir, Inc.	Irrigation 1/1/59 - 12/1/59 and stock-watering	15 feet below intake	Staff gage and depth-flow relationship	0	0	9 ^a	6 ^a	11 ^a	62	2 ^a	9	9	12 ^a	11 ^a	3	93 ^a	
0-43W/9-1-3-4	Sum grange, ditch levee probe and area	Irrigation and stock-watering	5 feet below intake	Depth-flow relationship	5 ^a	4 ^a	5 ^a	4 ^a	5 ^a	4	5 ^a	5 ^a	5 ^a	5 ^a	4 ^a	5 ^a	50 ^a	
0-43W/10-1-3-5	Stuart reservoir, Inc.	Irrigation 1/1/59 - 12/1/59 and stock-watering	1/2 mile above area of use	Staff gage and depth-flow relationship	0	0	5	9	9	9	9	9	9	9	9	9	90	

* See remarks for further explanation.
--NR-- No record for period indicated

TABLE 3 (Continued)
MONTHLY RECORDS OF SURFACE WATER DIVERSIONS

Location number	Diversion name or owner	Uses	Point of measurement or estimate	Method of observation and collection	Amount diverted, in acre-feet												Remarks	
					Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec		Total
BUTTE CREEK SUBUNIT																		
D-3W/1A-981	Wayville II, Halls	Irrigation and stock-watering	100 feet below intake of ditch on left bank and 200 feet below intake bank on right	Staff gage and depth-flow relationship	-----	-----	-----	5 ⁰	11	19	26	17	16	15	14	10 ⁰	114 ⁰	Combined measurements from two ditches.
D-3W/2A-103	New Spring, Hatch	Irrigation 2/9/59 - 9/10/59 and stock-watering	30 feet below intake	Staff gage and depth-flow relationship	0	0	0	0	2 ⁰	7	6	9 ⁰	0	0	0	0	28 ⁰	
D-3W/3A-1081	Ellis J. Louie	Irrigation and stock-watering	100 feet below intake	Staff gage and depth-flow relationship	-----	-----	-----	-----	27 ⁰	38 ⁰	34 ⁰	38 ⁰	26 ⁰	0	0	0	183 ⁰	
D-3W/3A-1071	Ellis J. Louie	Irrigation 4/27/59 - 9/20/59 and stock-watering	At intake	Staff gage and depth-flow relationship	0	0	0	3	41	113	114	86	54	0	0	0	401	
D-3W/3A-1021	Double Spring, Ditch	Irrigation and stock-watering	100 feet below intake	Staff gage and depth-flow relationship	-----	-----	-----	0	6 ⁰	22 ⁰	17 ⁰	31 ⁰	16 ⁰	0	0	0	92 ⁰	
D-3W/3A-1591	Ellis J. Louie	Irrigation and stock-watering	100 feet below intake	Staff gage and depth-flow relationship	-----	-----	-----	36 ⁰	45	60	114	108	63	0	0	0	446 ⁰	
D-3W/3A-2821	Ellis J. Louie	Irrigation and stock-watering	300 feet below intake	Staff gage and depth-flow relationship	-----	-----	-----	55 ⁰	130	138	212	145	64	14	14	0	772 ⁰	
D-3W/3A-2521	Ellis J. Louie	Irrigation and stock-watering	300 feet below intake	Staff gage and depth-flow relationship	-----	-----	-----	256 ⁰	233	133	101	70	65	56	54	20	988 ⁰	
D-3W/3A-2611	Ellis J. Louie	Irrigation 4/26/59 - 9/20/59 and stock-watering	100 feet below intake	Staff gage and depth-flow relationship	0	0	0	91 ⁰	88	98	63	68	55	52	45	42 ⁰	562 ⁰	
D-3W/3A-2612	Ellis J. Louie	Irrigation and stock-watering	On source 400 feet above intake with ditch from D-3W/3A-2611	Staff gage and depth-flow relationship	-----	-----	-----	9 ⁰	46	40	38	42	39	39	38	31 ⁰	322 ⁰	Entire flow diverted below point of measurement.
D-3W/3A-2601	Ellis J. Louie	Irrigation 5/3/59 - 9/20/59 and stock-watering	On stream 500 feet above intake	Staff gage and depth-flow relationship	-----	-----	-----	67 ⁰	516	354	163	95	69	75	73	61 ⁰	1,175 ⁰	Entire flow diverted below point of measurement.
D-3W/3A-2711	Ellis J. Louie	Irrigation and stock-watering	100 feet below intake	Staff gage and depth-flow relationship	-----	-----	-----	36 ⁰	224	189	100	77	79	92	91	33	921 ⁰	
D-3W/3A-2771	Ellis J. Louie	Irrigation and stock-watering	400 feet below intake	Staff gage and depth-flow relationship	-----	-----	-----	5	40	36	48	42	25	0	0	0	196	
D-3W/3A-2641	Ellis J. Louie	Irrigation and stock-watering	300 feet below intake	Staff gage and depth-flow relationship	-----	-----	-----	4 ⁰	31	26	25	24	24	22	19	7	182 ⁰	
D-3W/3A-2611	Ellis J. Louie	Irrigation and stock-watering	300 feet below intake	Staff gage and depth-flow relationship	-----	-----	-----	7 ⁰	30	11	4	3	4	4	3	1	67 ⁰	
D-3W/3A-2611	Ellis J. Louie	Irrigation and stock-watering	400 feet below intake, 200 feet below gravity	Staff gage and depth-flow relationship	-----	-----	-----	10 ⁰	146 ⁰	104	62	26	31	39	26	7	552 ⁰	
D-3W/3A-2611	Ellis J. Louie	Irrigation and stock-watering	At intake	Staff gage and depth-flow relationship	-----	-----	-----	225 ⁰	226	246	140	21 ⁰	19 ⁰	62 ⁰	119	94	1,161 ⁰	
D-3W/3A-2611	Ort Lower Ditch	Irrigation	30 feet below intake	Staff gage and depth-flow relationship	-----	-----	-----	35 ⁰	32 ⁰	36	25	13	13	16	18	16	280 ⁰	
D-3W/3A-581	Southern Pacific Railroad Company	Irrigation																
D-3W/3A-591	Southern Pacific Railroad Company	Irrigation																

See memo.

• Monthly value estimated
--N/A-- No record for period indicated

TABLE 3 (Continued)
MONTHLY RECORDS OF SURFACE WATER DIVERSIONS

Location number	Diversion name or owner	Use	Point of measurement or estimate	Method of observation and calculation	Amount diverted, in acre-feet												Remarks	
					Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec		Total
BUTTE CREEK SUBUNIT (Continued)																		
D-4N/14-1941	Leas & Johnson	Irrigation and stock-watering	1.0 feet below intake	Staff gage and depth-flow relationship	-----	-----	70 ^a	119	160	119	127	33	75	118	47	0	888 ^a	
D-4N/14-1942	Leas & Johnson	Irrigation and stock-watering	1.0 feet below spillway	Staff gage and depth-flow relationship	-----	-----	0	367 ^a	545	274	192	16	91	168	44	0	1,697 ^a	
D-4N/14-2031	Mr. Ross, Inc.	Irrigation	1.00 feet below intake	Staff gage and depth-flow relationship	-----	-----	187 ^a	201	262	153	101	99	98	105	131	18 ^a	1,544 ^a	
D-4N/14-2032	Mr. Ross, Inc.	Irrigation	50 feet below intake	Staff gage and depth-flow relationship	-----	-----	95 ^a	92 ^a	96	31	0	0	0	0	0	0	314 ^a	
D-4N/14-2101	Mr. Ross, Inc.	Irrigation	200 feet below intake	Staff gage and depth-flow relationship	-----	-----	2 ^a	327 ^a	407 ^a	179	55 ^a	47 ^a	6 ^a	26 ^a	32 ^a	37 ^a	1,143 ^a	
D-4N/14-2101	Mr. Ross, Inc.	Irrigation	53 feet below intake	Depth-flow relationship and water stage recorder	-----	-----	265 ^a	436	581	288	202	108	0	0	0	0	1,688 ^a	
D-4N/14-2211	Gray House Ditch	Irrigation and stock-watering	25 feet below intake	Staff gage and depth-flow relationship	12 ^a	11 ^a	12 ^a	11 ^a	10	6	3	6	6	7 ^a	10 ^a	10 ^a	104 ^a	
D-4N/14-2341	Gray Ditch	Irrigation and stock-watering	500 feet below intake, 50 ft. below spillway	Staff gage and depth-flow relationship	-----	-----	36 ^a	32	42	32	33	40	31	4 ^a	0	0	44 ^a	
D-4N/14-2342	Boyle South Ditch	Irrigation and stock-watering	550 feet below intake, 10 ft. below spillway	Staff gage and depth-flow relationship	-----	-----	134 ^a	149 ^a	76	110	106	95	34	0	0	0	708 ^a	
D-4N/14-2343	Boyle Middle Ditch	Irrigation and stock-watering	330 feet below intake, 155 ft. below spillway	Staff gage and depth-flow relationship	-----	-----	35 ^a	20	46	53	34	34	0	0	0	0	242 ^a	
D-4N/14-2344	Boyle Upper North Ditch	Irrigation and stock-watering	20 feet below spillway	Staff gage and depth-flow relationship	-----	-----	22 ^a	108 ^a	122	122	98	113	122	80	37	36 ^a	880 ^a	
D-4N/14-2345	Gray Ditch	Irrigation and stock-watering	13 feet below intake	Staff gage and depth-flow relationship	0	0	0	12 ^a	16 ^a	16 ^a	16 ^a	14	8	3	0	0	85 ^a	
D-4N/14-2346	Gray Ditch	Irrigation and stock-watering	6 feet below intake	Staff gage and depth-flow relationship	0	0	0	39 ^a	52 ^a	50 ^a	54 ^a	45	17	20 ^a	0	0	277 ^a	
D-4N/14-2347	Boyle Lower North Ditch	Irrigation and stock-watering	75 feet below intake	Staff gage and depth-flow relationship	0	0	0	81 ^a	122	80	76	80	96	60	0	0	638 ^a	
D-4N/14-2348	Mr. & Mrs. Davis	Irrigation and stock-watering	1.00 feet below intake	Staff gage and depth-flow relationship	-----	-----	9 ^a	5	4	5	6	8 ^a	6 ^a	3	0	0	16 ^a	
D-4N/14-2349	Intermountain Paper Company	Irrigation and stock-watering	30 feet below intake	Staff gage and depth-flow relationship	-----	-----	1 ^a	3	1	1	1	1	0	0	0	0	8 ^a	
D-4N/14-2351	Boyle North Ditch	Irrigation and stock-watering	feet below intake	Staff gage and depth-flow relationship	-----	-----	1 ^a	12 ^a	14	26	15	10	1 ^a	1 ^a	0	0	70 ^a	Includes 1 acre-foot diverted by D-4N/14-2352.

Includes 3 acre-feet diverted by D-4N/14-2352.

See remarks
a Monthly value estimated
NR No record for period indicated

TABLE 3 (Continued)
MONTHLY RECORDS OF SURFACE WATER DIVERSIONS

Location number	Diversion name or owner	Use	Point of measurement or estimate	Method of observation and calculation	Amount diverted, in acre-feet												Remarks	
					Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec		Total
BUTTE VALLEY SUBUNIT																		
D-43N/24-191	Salph Leds	Irrigation and stockwatering	100 feet below intake	Water stage recorder and depth-flow relationship	18 ^a	17 ^a	158 ^b	255	262	299	111	138	149	117	108	28 ^a	1,456 ^a	
D-43N/24-201	Water canon	Irrigation, stockwatering, and power	50 feet below spring	Staff gage and depth-flow relationship	NK	19 ^a	41 ^a	41 ^a	42 ^a	41 ^a	42 ^a	44 ^a	41 ^a	42 ^a	40 ^a	39 ^a	432 ^a	
D-43N/24-201	High-line Canal	Irrigation, stockwatering, and groundwater recharge	1 mile above intake*	Water stage recorder and depth-flow relationship*					4,110	2,100	1,600	1,600	600	400			7,800 ^a	From Butte Valley Irrigation District annual report, 1959. Together with D-43N/24-202, diverts entire stream.
D-43N/24-202	Boyer ranch Ditch	Groundwater recharge	1 mile above intake*	Water stage recorder and depth-flow relationship*	500	100	3,540	3,200	800						200	200 ^a	9,400 ^a	From Butte Valley Irrigation District annual report, 1959. Together with D-43N/24-201, diverts entire stream.
D-43N/24-201	Meise ranch	Irrigation and stockwatering	At head	Staff gage and depth-flow relationship	NK	44 ^a	46 ^a	37	25	4 ^a	0	0	0	0	0	0	156 ^a	Staff stream diverted below point of measurement.
D-43N/24-201	Meise ranch	Irrigation and stockwatering	On stream 150 feet above head*	Staff gage and depth-flow relationship	NK	102 ^a	110 ^a	99 ^a	75	35	24	27	28	36	41	37	614 ^a	Staff stream diverted below point of measurement.
D-43N/24-201	Meise ranch	Irrigation and stockwatering	On stream 50 feet above head*	Staff gage and depth-flow relationship	NK	85 ^a	95 ^a	95	75	38	22	20	23	30	38	48	569 ^a	Staff stream diverted below point of measurement.
D-43N/24-201	Meise ranch	Irrigation and stockwatering	At pump	Pump rating and power record					140 ^a	NK	109	243	222				714 ^a	
D-43N/24-201	Meise ranch	Irrigation and stockwatering	At pump	Pump rating and power record						534	701	934					4,149	
D-43N/24-201	Meise ranch	Irrigation and stockwatering	At pump	Pump test and operation record			113	85	NK	42	424						604	
CLEAR LAKE SUBUNIT																		
D-47N/24-201	Clear Lake reservoir	Storage, irrigation, and flood control	At dam*	U. S. Bureau of Reclamation records	0	0	0	5,010	9,010	14,140	11,400	10,450	9,450	1,200	0	0	58,860 ^a	Amount diverted represents water released into Lost River for consumptive use.
D-48N/24-201	Millan ranch	Irrigation and stockwatering	50 feet below intake	Staff gage and depth-flow relationship	25	23	25	24	25	24	25	25	24	25	24	25	294	
D-48N/24-201	Millan ranch	Irrigation and stockwatering	20 feet below intake	Staff gage and depth-flow relationship	7	6	7	7	7	7	7	7	7	7	7	7	83	
D-48N/24-201	Owen Springs Ditch	Irrigation and stockwatering	30 feet north of Shale Line road	Staff gage and depth-flow relationship				18	18	16	15	14	13				94	

* See notes
* Morning value estimated
--NK-- No record for period indicated

TABLE 3 (Continued)
MONTHLY RECORDS OF SURFACE WATER DIVERSIONS

Location number	Division name of owner	Use	Point of measurement or estimate	Method of observation and calculation	Amount diverted, in acre-feet												Remarks	
					Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec		Total
MOUNT DOME SUBUNIT																		
	Hamond ranch	Irrigation and stock-watering	At pump	Pump test and power record	Nil	Nil	Nil	93	136	112	388	106	48	Nil	Nil	Nil	923	
2-48/26-22A	Hamond ranch	Irrigation and stock-watering	20 feet below intake	Staff gage and depth-flow relationship	Nil	Nil	178 ^a	296 ^a	393	323	363	350	319	0	0	0	2,244 ^a	
2-48/26-27A1	Hamond ranch	Irrigation and stock-watering	200 feet below springs	Staff gage and depth-flow relationship	Nil	Nil	72 ^a	93	98	89	92	92	89	Nil	Nil	Nil	625 ^a	
2-47/15-1P1	Perry A. Langer	Irrigation and stock-watering	20 feet below intake	Staff gage and depth-flow relationship	Nil	Nil	105 ^a	27 ^a	26	31	30	29	30	30	25	17	255 ^a	
2-47/15-3L1	Mills brothers	Irrigation and stock-watering	Less than 100 feet below intakes ^a	Water stage recorder and depth-flow relationship	Nil	Nil	74 ^a	293 ^a	371 ^a	403 ^a	313	442 ^a	462	402 ^a	271	289	1,126 ^a	Measurements of three ditches combined.
2-47/15-3L2	Perry A. Langer	Irrigation and stock-watering	30 feet below intake	Staff gage and depth-flow relationship	Nil	Nil	29 ^a	31	34	29	34	33	35	37 ^a	36 ^a	40 ^a	338 ^a	Measurements of two ditches combined. Includes an unknown amount of return flow.
2-47/15-3L3	Mary Porterfield	Irrigation and stock-watering	100 feet or less below intakes ^a	Water stage recorder and depth-flow relationship	Nil	Nil	26 ^a	235 ^a	279 ^a	273 ^a	272 ^a	264	226	0	0	0	1,766 ^a	Measurements of two ditches combined. Includes an unknown amount of return flow.
2-47/15-2P1	Mary Porterfield	Irrigation and stock-watering	100 feet below intakes ^a	Water stage recorder and depth-flow relationship	Nil	Nil	160 ^a	357	278	244 ^a	232 ^a	143 ^a	125 ^a	0	0	0	1,539 ^a	Measurements of two ditches combined.
2-47/15-2A1	Porterfield water-vault	Irrigation and stock-watering	At spillway	Operation record and estimated flow	Nil	Nil	61 ^a	60 ^a	8 ^a	14 ^a	106 ^a	92 ^a	97 ^a	Nil	Nil	Nil	438 ^a	
2-47/15-2P1	Mary Porterfield	Irrigation and stock-watering	At intake	Staff gage and depth-flow relationship	Nil	Nil	8 ^a	4	2	1	7	0	50	50	50	47 ^a	349 ^a	
2-47/15-2-1P3	Leon Richelson	Irrigation and stock-watering	A few feet below intakes ^a	Staff gage and depth-flow relationship	Nil	Nil	23 ^a	65	26	5	2	22	80	52	85 ^a	358 ^a	358 ^a	Measurements of three ditches combined.
2-47/15-1P1	Leo Boyle	Irrigation and stock-watering	10 feet below intake	Staff gage and depth-flow relationship	Nil	Nil	51 ^a	48	8	0	0	0	0	0	13	80 ^a	198 ^a	
2-47/15-1L1	John Theasara	Irrigation and stock-watering	At intake	Staff gage and depth-flow relationship	Nil	Nil	292 ^a	199	187	137	93	154	201	533	495 ^a	520	4,778 ^a	
2-47/15-1L2	Perry A. Langer	Irrigation and stock-watering	At road crossing	Water stage recorder and depth-flow relationship	Nil	Nil	33 ^a	152	194	7	92	76	102	150	232	260	1,269 ^a	
2-47/15-2P1	Jan O'Keefe	Irrigation and stock-watering	A few feet below intakes ^a	Staff gage and depth-flow relationship	Nil	Nil	40 ^a	53	40	0	44	16	0	20	15 ^a	268 ^a	268 ^a	Measurements of two ditches combined.
2-47/15-2P1d	Jan O'Keefe	Irrigation and stock-watering	20 feet below intake	Staff gage and depth-flow relationship	Nil	Nil	21	52	4	0	0	99	62	18	44 ^a	26 ^a	26 ^a	

• See remarks
• Monthly value estimated
--Nil-- No record for period indicated

TABLE 3 (Continued)
MONTHLY RECORDS OF SURFACE WATER DIVERSIONS

Location number	Diversion name or owner	Use	Point of measurement or estimate	Method of observation and calculation	Amount diverted, in acre-feet												Remarks					
					Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec		Total				
					MOUNT DOOM SUBUNIT (Continued)																	
					Staff gage and depth-flow relationship				27 ^a	46	1	0	0	13	39	94	89 ^a	309 ^a	Measurements include total of these three diversions.			
					Staff gage and depth-flow relationship	0	0	0	0	75	73	75	75	73	0	0	0	371				
					Staff gage and depth-flow relationship	37	33	36	35	37	35	36	37	36	36	36	37	431				
						TABLE 4. LKX SUBUNIT																
						(NO DIVERSIONS MEASURED IN THIS SUBUNIT)																

* See remarks
* Monthly value estimated
--NA-- No record for period indicated

line into California for irrigation in the Tululake Irrigation District and for maintenance of waterfowl habitat in the Tule Lake and Lower Klamath Lake National Wildlife Refuges. In 1959, the Tululake Irrigation District purchased 173,210 acre-feet for distribution to users within its borders.

Index to Surface Water Diversions

An alphabetical index to diversion names and owners is provided in Table 4 at the end of this chapter. This table gives the location number, the subunit, and the county of each diversion. To assist in finding diversion data, the table also lists pages of text and the sheet number of Plate 2 pertinent to each diversion.

Water Service Agencies

There are three areas within the unit in which sizeable acreages are irrigated with surface water provided by public agencies. These are the service areas of Butte Valley and Tululake Irrigation Districts and Lower Klamath Lake National Wildlife Refuge. The boundaries of these service areas are shown on Plate 3.

Other public water agencies in the unit include:

Butte Valley Soil Conservation District

City of Dorris Water Department

Siskiyou County Flood Control and Water Conservation District

Tennant Services District

City of Tululake Water Department

TABLE 4
INDEX TO SURFACE WATER DIVERSIONS

Diversion name or owner	Diversion location	Subunit and County	References	
			Plate 2 Sheet No.	Text and appendix page numbers
Allen, J. G., Sr.	D-46N/1E-25L1 -35H1	Mt. Dome Mt. Dome Siskiyou	1 1	27, 58 27, 58
Avanzino Reservoir Rouse, Carlton O. & Ethyl A.	D-46N/10E-35N1	Boles Modoc	12	16, 31, 53, 86
Baseball Reservoir Modoc National Forest	D-47N/10E-13M1	Boles Modoc	8	17, 54
Bidart Brothers, Inc.	D-47N/11E-20J1	Boles	8	17, 31, 54
	-20J2	Boles	8	17, 31, 54
	D-48N/10E-34D1	Boles	4	18, 31, 54
		Modoc		
	See also: Dry Valley Reservoir Janes Reservoir Weed Valley Reservoir			
Big Johnson Dam Johnson, Stanley	D-47N/7E-6F1	Clear Lake Modoc	7	24, 88
Bishop, Ken	See: Ken Del Ranch			
Blue Mountain Meadows Stock Tank Modoc National Forest	D-46N/10E-16K1	Boles Modoc	12	15
Boyes Ranch Ditch Butte Valley Irrigation District	D-45N/2W-12H2	Butte Valley Siskiyou	13	22, 34, 56, 84, 88
Bray House Ditch Walton, Beatrice L. & Robinson, Rose L.	D-44N/1W-22E1	Butte Creek Siskiyou	17	21, 33, 55
Buchanan Flat Reservoir Modoc National Forest	D-48N/10E-28N1	Boles Modoc	4	18, 54
Butte Valley Irrigation District	See: Boyes Ranch Ditch & High-line Canal			
Clear Lake Reservoir U. S. Department of Interior, Bureau of Reclamation	D-47N/8E-bK1	Clear Lake Modoc	7	24, 34
Cross, Charles E. & Lucinda	D-47N/1E-2A1	Mt. Dome	5	25, 57
	-2J1	Mt. Dome	5	25, 57
	D-48N/1E-25N1	Mt. Dome	1	27, 58
	-25N2	Mt. Dome	1	27, 58
	-36F1	Mt. Dome	1	27, 58
		Siskiyou		27, 36
Dalton, W. C., Company	See: Steele Swamp Ranch			
Davis, Orlo	D-45N/2W-20M1	Butte Creek	13	22, 33, 55
	-20M2	Butte Creek Siskiyou	13	22, 55
	See also: Davis Cabin Ditch			
Davis Cabin Ditch Davis, Orlo	D-45N/3W-25H1	Butte Creek Siskiyou	13	22, 33, 55

TABLE 4 (Continued)
INDEX TO SURFACE WATER DIVERSIONS

Diversion name or owner	Diversion location	Subunit and County	References	
			Plate 2 Sheet No.	Text and appendix page numbers
Dead Horse Flat Reservoir Modoc National Forest	D-44N/9E-5P1	Clear Lake Modoc	20	24, 56
Double Spring Ditch Louie, Ellis J.	D-43N/2W-10G1	Butte Creek Siskiyou	21	19, 32, 54
Dry Valley Reservoir Bidart Brothers, Inc.	D-46N/11E-7N1	Boles Modoc	12	16, 53, 88
Everly, Irwin C., et al	D-47N/12E-15N1	Boles Modoc	8	18, 88
Fayne, Michael H. & Mary L.	D-47N/6E-27L1	Tule Lake Modoc	7	28
Fogle, Leo	D-47N/2E-17P1 D-48N/1E-35J1 -35R1	Mt. Dome Mt. Dome Mt. Dome Siskiyou	6 1 1	26, 35, 57 27, 58 27, 58
Four Mile Reservoir Modoc National Forest	D-48N/9E-26F1	Boles Modoc	4	18
Garden Stock Tank Modoc National Forest	D-46N/10E-33B1	Boles Modoc	12	16
Grohs, Neva. & Sons	See: Owen Springs Warm Springs Wilson Ranch			
Owen Springs Ditch Grohs, Neva, & Sons	D-48N/9E-20B1	Clear Lake Modoc	4	25, 34, 57
Hackamore Reservoir Modoc National Forest	D-43N/7E-23D1	Clear Lake Modoc	23	24
Hager Basin Reservoir Rouse, Carlton O. & Ethyl A.	D-45N/10E-1B1	Boles Modoc	16	15, 53
Hammond Ranch	D-46N/2E-9Q1 -15L1 -22G1 -27A1	Mt. Dome Mt. Dome Mt. Dome Mt. Dome Siskiyou	10 10 10 10	25, 35, 57 25, 57 25, 35, 57 25, 35, 57
Happy Valley Reservoir Modoc National Forest	D-48N/10E-21H1	Boles Modoc	4	18, 54
Hart, Gladys	D-42N/1W-15A1 -18E1 -19C1	Butte Creek Butte Creek Butte Creek Siskiyou	25 25 25	18, 54 18, 54 18, 54
Heightman, G. W.	D-47N/2E-20C1	Mt. Dome Siskiyou	6	37, 36, 57
High-line Canal Butte Valley Irrigation District	D-45N/2W-12H1	Butte Valley Siskiyou	13	22, 34, 56, 88
Hills Brothers	D-47N/1E-3L1	Mt. Dome Siskiyou	5	26, 35, 57

TABLE 4 (Continued)
INDEX TO SURFACE WATER DIVERSIONS

Diversion name or owner	Diversion location	Subunit and County	References	
			Plate 2 Sheet No.	Text and appendix page numbers
Huffman Reservoir Modoc National Forest	D-47N/10E-14P1	Boles Modoc	8	17, 54
International Paper Company	D-43N/1W-1Q1	Antelope Creek	21	14, 31, 53
	-13D1	Antelope Creek	21	14, 31, 53
	D-45N/2W-29D1	Butte Creek Siskiyou	13	22, 33, 55
Jacks Butte Stock Tank Weyler, Dave	D-43N/10E-5Q1	Boles Modoc	24	14, 53
Janes Reservoir Bidart Brothers, Inc.	D-47N/10E-25R1	Boles Modoc	8	17, 31, 54, 88
Jessup, Roger, Farms Company	See: Pease Flat Reservoir			
Johnson, Eric R.	D-44N/1W-19N1	Butte Creek	17	20, 33, 55
	-19N2	Butte Creek Siskiyou	17	21, 33, 55
Johnson, Stanley	See: Big Johnson Dam			
Juanita Lake Meiss Ranch	D-46N/2W-20E1	Butte Valley Siskiyou	9	23, 56
Ken-Del Ranch	D-43N/1W-23H1	Antelope Creek Siskiyou	21	14, 31, 53
Langer, Perry A	D-47N/1E-1P1	Mt. Dome	5	25, 35, 57
	-12R1	Mt. Dome	5	26, 35, 57
	D-47N/2E-18L2	Mt. Dome Siskiyou	6	26, 35, 57
Lavender, John Wilson, Sr.	D-44N/1E-7C1	Antelope Creek Siskiyou	17	14, 31, 55, 88
Lost Valley Reservoir Weyler, Dave	D-44N/9E-21G1	Clear Lake Modoc	20	24, 56
Louie, Ellis J.	D-43N/2W-10B1	Butte Creek	21	19, 32, 54
	-10F1	Butte Creek	21	19, 32, 54
	-15R1	Butte Creek	21	19, 32, 54
	-22C1	Butte Creek	21	19, 32, 54
	-22G1	Butte Creek	21	19, 32, 54
	-26L1	Butte Creek	21	19, 32, 55
	-26L2	Butte Creek	21	19, 32, 55
	-26M1	Butte Creek	21	20, 32, 55
	-27A1	Butte Creek	21	20, 32, 55
	-27K1	Butte Creek	21	20, 32, 55
	-34B1	Butte Creek	21	20, 32, 55
	-34G1	Butte Creek Siskiyou	21	20, 32, 55
	See also: Double Spring Ditch Rose Spring Ditch			
Loveness, Loyal H. & Vinton H.	D-48N/6E-20N1	Tule Lake Modoc	3	28, 58, 88
Lutz, Ralph	D-45N/1W-19H1	Butte Valley Siskiyou	13	22, 34, 56

TABLE 4 (Continued)
INDEX TO SURFACE WATER DIVERSIONS

Diversion name or owner	Diversion location	Subunit and County	References	
			Plate 2 Sheet No.	Text and appendix page numbers
McKay, John	D-48N/1E-25G1	Mt. Dome	1	27, 58
	-25K1	Mt. Dome	1	27, 58
	-25L2	Mt. Dome	1	27, 58
	D-48N/2E-31M1	Mt. Dome	2	28, 36, 58
	-31N1	Mt. Dome	2	28, 36, 58
	-31N2	Mt. Dome	2	28, 36, 58
		Siskiyou		
Meiss Ranch	D-46N/2W-4E1	Butte Valley	9	23, 56
	-5D1	Butte Valley	9	23, 34, 56
	-5N1	Butte Valley	9	23, 34, 56
	-8F1	Butte Valley	9	23, 34, 56
	-9R1	Butte Valley	9	23, 34, 56
	-12H1	Butte Valley	9	23, 34, 56
	-13A1	Butte Valley	9	23, 56
	D-47N/2W-26E1	Butte Valley	5	23, 34, 56
		Siskiyou		
	See also: Juanita Lake			
Mills, Maybelle B.	D-43N/1W-9K1	Butte Creek Siskiyou	21	18, 32, 54
Modoc National Forest	See: U. S. Department of Agriculture			
Nicholson, Ines	D-47N/2E-17G1	Mt. Dome Siskiyou	6	26, 35, 57
O'Keefe, Dan	D-47N/2E-19J1	Mt. Dome	6	26, 35, 57
	-19R1	Mt. Dome Siskiyou	6	27, 35, 57
Orr Brothers, Inc.	D-44N/1W-20B1	Butte Creek	17	21, 33, 55
	-20B2	Butte Creek	17	21, 33, 55
	-20C1	Butte Creek	17	21, 33, 55
	-20D1	Butte Creek	17	21, 33, 55
		Siskiyou		
Orr Lower Ditch Orr Brothers, Inc.	See also: Orr Lower Ditch			
	D-44N/1W-4R1	Butte Creek Siskiyou	17	20, 32, 55
Pease Flat Reservoir Jessup, Roger, Farms Co.	D-47N/12E-28G1	Boles Modoc	8	18, 54
Picnic Grove Reservoir Modoc National Forest	D-47N/10E-16E1	Boles Modoc	8	17, 54
Porterfield, Mary	D-47N/1E-23G1	Mt. Dome	5	26, 35, 57
	-23H1	Mt. Dome	5	26, 35, 57
	D-47N/2E-8Q1	Mt. Dome	6	26, 57
	-9N1	Mt. Dome	6	26, 35, 57
		Siskiyou		
Porterfield Reservoir Porterfield, Mary	See also: Porterfield Reservoir			
	D-47N/1E-24F1	Mt. Dome Siskiyou	5	26, 35, 57
Reservoir "F" Weyler, Dave	D-43N/9E-12H1	Boles Modoc	24	14, 31, 53

TABLE 4 (Continued)
INDEX TO SURFACE WATER DIVERSIONS

Diversion name or owner	Diversion location	Subunit and County	References	
			Plate 2 Sheet No.	Text and appendix page numbers
Reservoir "G" Rouse, Carlton O. & Ethyl A.	D-45N/10E-27D1	Boles Modoc	16	15, 53
Reservoir "M" Weyler, Dave	D-44N/9E-13A1	Boles Modoc	20	14, 53
Reservoir "N" Weyler, Dave	D-44N/9E-25F1	Boles Modoc	20	14, 53
Reynolds, Del	See: Bray House Ditch			
Robison, Walter	D-45N/2W-5M1 -5F1	Butte Valley Butte Valley Siskiyou	13 13	22, 34, 56 22, 56
Rose Spring Ditch Louie, Ellis J.	D-43N/2W-3Q1	Butte Creek Siskiyou	21	19, 32, 54
Round Willow Reservoir Modoc National Forest	D-47N/11E-12M1	Boles Modoc	8	17
Rouse, Carlton O. & Ethyl A.	D-45N/10E-3K1	Boles	16	15, 53
	-3R1	Boles	16	15, 31, 53
	-11E1	Boles	16	15, 53
	-11E2	Boles	16	15, 53
	D-46N/10E-25G1	Boles	12	16, 53
	-36A1	Boles	12	16
	-36J1	Boles	12	16
	See also:			
	Avanzino Reservoir			
	Hager Basin Reservoir			
	Reservoir "G"			
Shasta Cattle Company	See: Meiss Ranch & Juanita Lake			
Soule, Ray	D-44N/2W-24N1	Butte Creek	17	21, 33, 55
	-24N5	Butte Creek	17	21, 33, 55
	-24N6	Butte Creek Siskiyou	17	21, 33, 55
	See also:			
	Soule Lower North Ditch			
	Soule Middle Ditch			
	Soule South Ditch			
Soule Upper North Ditch Soule, Ray	Soule Upper North Ditch			
	D-44N/2W-24F1	Butte Creek Siskiyou	17	22, 33
	D-44N/2W-24N3	Butte Creek Siskiyou	17	21, 33, 55
	D-44N/2W-24N2	Butte Creek Siskiyou	17	21, 33, 55
Soule Middle Ditch Soule, Ray	D-44N/2W-24N4	Butte Creek Siskiyou	17	21, 33, 55
	D-46N/11E-25A1	Boles Modoc	12	16
South Mountain Reservoir Modoc National Forest				

TABLE 4 (Continued)
INDEX TO SURFACE WATER DIVERSIONS

Diversion name or owner	Diversion location	Subunit and County	References	
			Plate 2 Sheet No	Text and appendix page numbers
Southern Pacific Railroad Co.	D-44N/1W-5B1	Butte Creek	17	20, 32, 55
	-5H1	Butte Creek	17	20, 32, 55
	-5H2	Butte Creek	17	20, 55
	-5H3	Butte Creek Siskiyou	17	20, 55
Spaulding Reservoir Modoc National Forest	D-42N/7E-2G1	Clear Lake Modoc	23	24, 56
Spencer, Martin E.	D-48N/2W-18C1	Butte Valley	1	23
	-18D1	Butte Valley Siskiyou	1	23, 56
Steele Swamp Ranch	D-47N/9E-20R1	Boles	8	16, 31, 53
	-29Q1	Boles	8	16, 31, 53
	-31A1	Boles Modoc	8	17, 31, 53
Sullivan, Frank J., Jr.	D-48N/6E-26M1	Tule Lake	3	28, 58, 88
	-26Q1	Tule Lake	3	28, 58, 88
	-35B1	Tule Lake Modoc	3	28, 58, 88
Telephone Flat Reservoir Modoc National Forest	D-45N/11E-3B1	Boles Modoc	16	15
Thackara, John	D-47N/2E-18L1	Mt. Dome Siskiyou	6	26, 35, 57
Timbered Ridge Reservoir Modoc National Forest	D-46N/9E-25J1	Boles Modoc	12	15, 53
U. S. Department of Agriculture Forest Service Modoc National Forest	D-43N/7E-35D1	Clear Lake	23	24, 56
	-35L1	Clear Lake	23	24, 56
		Modoc		
	D-46N/10E-27E1	Boles	12	16
	D-47N/11E-5A1	Boles	8	17, 54
	-23K1	Boles Modoc	8	17, 54
See also:				
	Baseball Reservoir			
	Blue Mountain Meadows			
	Stock Tank			
	Buchanan Flat Reservoir			
	Dead Horse Flat Reservoir			
	Four Mile Reservoir			
	Garden Stock Tank			
	Hackamore Reservoir			
	Happy Valley Reservoir			
	Huffman Reservoir			
	Picnic Grove Reservoir			
	Round Willow Reservoir			
	South Mountain Reservoir			
	Spaulding Reservoir			
	Telephone Flat Reservoir			
	Timbered Ridge Reservoir			
	West Black Rock Reservoir			
	Wild Horse Reservoir			
U. S. Department of the Interior Bureau of Reclamation	See:	Clear Lake Reservoir		

TABLE 4 (Continued)
INDEX TO SURFACE WATER DIVERSIONS

Diversion name or owner	Diversion location	Subunit and County	References	
			Plate 2 Sheet No.	Text and appendix page numbers
Van Bremner Ditch Van Bremner Ditch Company	D-48N/3E-14M1	Tule Lake Siskiyou	2	28, 58
Vian, William S. & Beverly A.	D-48N/7E-21A1	Clear Lake	3	24, 56
	-21J1	Clear Lake	3	24, 56
	-22C1	Clear Lake Modoc	3	24, 56
Walton, Beatrice L.	See: Bray House Ditch			
Warm Springs Ditch Grohs, Neva, and Sons	D-48N/9E-33G1	Boles Modoc	4	18, 31, 54
Weed Valley Reservoir Bidart Brothers, Inc.	D-48N/10E-33L1	Boles Modoc	4	18, 54
West Black Rock Reservoir Modoc National Forest	D-45N/10E-24Q1	Boles Modoc	16	15
Weyler, Dave	D-44N/10E-8G1	Boles Modoc	20	14, 53
	See also: Jack's Butte Stock Tank Lost Valley Reservoir Reservoir "F" Reservoir "M" Reservoir "N"			
Wild Horse Reservoir Modoc National Forest	D-47N/10E-6G1	Boles Modoc	8	17, 54
Wilson Ranch Grohs, Neva, and Sons	D-48N/8E-23R1	Clear Lake	3	25, 57
	-23R2	Clear Lake	3	25, 57
	-26Q1	Clear Lake Modoc	3	25, 57

CHAPTER III. LAND USE

This chapter presents a brief discussion of the procedures, standards, and results of a survey of land use conducted in the Lost River-Butte Valley Hydrographic Unit in 1959. The results of this survey are given in Tables 5 and 6. The following short account of historical land use in the unit is presented as a background to the survey data.

Historical Land Use

As previously mentioned in Chapter I, development of the unit began later than that in the surrounding areas. The Indian Treaty of 1864 opened the land to some degree, but no significant development began until the end of the Modoc Indian War in 1873. Even after this, development continued at a slow pace until after 1900. With Tule Lake still receiving its natural inflow and covering its full natural bed, the unit's principal development was virtually limited to the Butte Valley and Oklahoma Flat areas farther west.

Authorization for the Klamath Project of the U. S. Bureau of Reclamation in 1905 marked the beginning of a new era in the unit. Completion of Clear Lake Dam in 1910 was the first major step toward transforming the area's lake beds and marshes into productive farmlands. The key flood control and water storage units of the project are Clear Lake Reservoir in California and Gerber Reservoir in Oregon. These two reservoirs provide a total storage capacity of over 620,000 acre-feet. The entire

project, with most of the water coming from the Klamath River, irrigates about 220,000 acres in the two-state service area. The fertile Tule Lake area, with water from this project, has become the largest and most diversified irrigated area in California north of the Sacramento Valley.

The development of lands for urban use has likewise been slow. Dorris, the only town listed in the unit's census data prior to 1940, has had a fairly steady growth. Its population passed the 500 mark in the 1920's, and by 1960 was nearly 1,000. The unit's second town, Tulelake, grew rapidly between 1930 and 1950 to over 1,000 residents, but the 1960 census showed only 950. Though these towns are essentially residential and commercial centers serving the surrounding agricultural areas, Dorris is also the site of a lumber mill. In addition to these two towns, small urban developments are also located at MacDoel and Tennant where sawmills have operated at times.

Present Land Use

According to the land use survey made in 1959 for this investigation, the majority of the developed lands within the unit are used for agricultural purposes. The additional developed acreage, which is utilized for urban and recreational purposes, totals only 1/10 of one percent of the area. Essentially undeveloped lands receiving no applied water, even though they provide recreation, timber, and range, are not segregated for the purpose of this report.

The land uses mapped in this survey fall into four major categories -- irrigated lands, dry-farmed lands, urban lands, and

recreational lands; and one minor category -- naturally high water table lands, such as meadowlands and marshes. Lands not included in any of these five categories were mapped as "native vegetation". The location and extent of the lands mapped in each category are indicated by color on Plate 2. The acreages of the various land uses within each subunit are presented in Table 5. The figures represent gross acreages, and include those nonwater-service areas which were individually too small to be delineated. Among these are roads, ditches, farmsteads, and miscellaneous rights-of-way.

Methods and Procedures

The land use survey was accomplished by an intensive field inspection of the unit, using aerial photographs -- the same ones used earlier in locating surface water diversions. The hydrographic unit was traversed by automobile as completely as roads and terrain would permit. Inspection of areas inaccessible by automobile was made, where necessary, on foot.

The particular use or type of development on each separate parcel of land was determined by on-the-spot observation. The corresponding area was then identified and delineated on the photograph on which it appeared. Stereoscopes to bring out relief were of great assistance in this process. The individual parcels were then labeled showing major use categories and specific uses of each. The major use categories (irrigated, dry-farmed, urban, etc.) are described in the following sections.

Agricultural lands were surveyed to determine which parcels were irrigated and what crops were raised. This information was then annotated on the photographs. The crops observed were identified by general crop groups as well as the specific crops present.

The general groups of crops and the specific crops comprising each group are listed below with crops in production in 1959 underscored:

G - Grain and hay crops

Wheat, barley, oats, miscellaneous.

F - Field crops

Cotton, safflower, flax, hops, sugar beets, corn, grain sorghums, castor beans, miscellaneous.

P - Pasture

Alfalfa, clover, mixed, native, induced high-water table native, sudan.

T - Truck

Artichokes, asparagus, beans, cole crops, carrots, celery, lettuce, melons, squash, cucumbers, onions and garlic, peas, potatoes, sweet potatoes, spinach, tomatoes, flowers and nursery, bushberries, strawberries, peppers, miscellaneous.

D - Deciduous fruits and nuts

Apples, apricots, cherries, peaches, nectarines, pears, plums, prunes, figs, almonds, walnuts, miscellaneous.

A sample aerial photograph with land use data delineated on it is shown in Illustration 1 on Page 50.

After completion of the field mapping, the data delineated on the photographs were transferred to copies of U. S. Geological Survey quadrangle maps reproduced at a scale

of 1:24,000. This procedure was necessary to bring the delineated areas to a common scale for accurate determination of acreages, since there was much variation in the scale in the aerial photographs. A series of these maps showing the location of all diversion systems and colored according to the land use categories was reviewed by local parties at meetings held in the unit in February 1964. These maps became the basis for Plate 2.

Another series of these maps was used in computing the acreages of the land uses. Each delineated area on these maps was manually cut out and was carefully weighed on an analytical balance. The weights were converted to acreages, using the ratios of weight to acreage determined for the individual maps. This method has proven to be a very expedient and accurate means of area determination where many small parcels are involved.

Irrigated Lands

Irrigated lands, as designated in this report, include all agricultural lands which receive water artificially. These lands, when noted in the field survey, were identified as such by the symbol "1" on the aerial photograph, as in the sample on Page 50. The fields normally irrigated, whether or not irrigated in the year of survey, were identified with their respective water sources. Idle irrigated lands are defined as lands which were not irrigated in the year of the survey, but had irrigation facilities and had been irrigated within the preceding three years. Fallow irrigated lands are those cultivated lands which have facilities for irrigation and may be irrigated during the year of

TABLE 5
LAND USE, 1959
(In acres)

Subunit and county	Irrigated lands	Naturally high water table lands		Dry-farmed lands	Urban lands	Recreational lands*			
		Meadowlands	Marsh			RR	RC	RT	PP
Antelope Creek Subunit Siskiyou County	485	348	0	833	2	75	0	4	0
Boles Subunit Modoc County	6,367	2,172	9	0	0	0	0	0	0
Butte Creek Subunit Siskiyou County	2,721	1,179	439	8	100	26	0	0	0
Butte Valley Subunit Siskiyou County	20,625	724	1,195	29,390	482	0	0	0	0
Clear Lake Subunit Modoc County	1,873	902	1	724	18	0	0	0	0
Mount Dome Subunit Siskiyou County	31,448	2,618	1,957	3,737	8	0	0	0	9,006
Tule Lake Subunit Modoc County	39,184	355	35	5,223	475	0	0	0	2,854
Siskiyou County Subunit Total	22,091 68,275	0 355	2,223 2,258	189 5,403	484 959	0 0	0 0	0 0	34,472 37,326
County Totals: Modoc County Siskiyou County	47,424 84,370	3,429 4,869	45 5,814	5,947 34,157	493 1,076	0 101	0 0	0 4	2,854 43,478
Hydrographic Unit Total	131,794	8,298	5,859	40,104	1,569	101	0	4	46,332

*Symbols indicate categories of recreational lands described on Page 59.
RR - Residential, RC - Commercial, RT - Camp and Trailer sites, PP - Parks.

survey, but at the actual date of survey were only tilled and not planted to a crop. This survey revealed 131,794 acres of irrigated lands in the Lost River-Butte Valley Hydrographic Unit, or about 9 percent of the unit's area. Approximate percentages in the general crop types were: grain, 53 percent; pasture type (including seed), 32 percent; truck, 11 percent; and field, 1 percent. The remaining 3 percent were idle or fallow.

The irrigated lands within the various subunits are reported in Table 6 according to their source of water. For each water source, the acreage of crop group is tabulated, as well as that of land usually irrigated but not cropped in 1959. The water source breakdown is made by the individual surface water diversions, by combinations of these diversions, and by ground water supply. For lands which receive both surface and ground water, this fact is also noted. The specific source of water is not identified for lands within and served by the Butte Valley and Tulelake Irrigation Districts.

Naturally High-Water Table Lands

In addition to the irrigated lands described above, there are lands supporting vegetation which utilize water from a naturally high-water table, such as mountain meadows and certain lands adjacent to lakes and streams. These lands are divided into two groups: "meadowlands" where the water table is normally below the surface, and "marsh" which is under water much of the year. These two groups are designated "naturally irrigated meadowlands" and "marsh or swamp" on Plate 2.

TABLE 6

IRRIGATED LANDS, 1959

(in acres)

Overseer or other sources serving irrigated lands	Overseer Location	Overseer Name or Owner	Pasture						Grain	Field Crops	Truck Crops				Other	Total Irrigated Idle or Fallow	Total
			Alfalfa B Mixtures	Clover	Clover (Seed)	Mixed	Mixed (Seed)	Native			Induced High Water Table	Onions B Garlic	Potatoes	Flowers B Nursery			
ANTELOPE CREEK SUBUNIT																	
M D B & M																	
D-438/98-1201	International Paper Co.				121												366
D-439/98-1301	International Paper Co.																60
D-438/98-1301	Kec-De1 Ranch																52
D-438/98-1301	Surface Water Supply				121	0	0	364	0	0	0	0	0	0	0	0	485
D-438/98-1301	Subunit (All in Shelby Co.)				121	0	0	364	0	0	0	0	0	0	0	0	485
BOLES SUBUNIT																	
D-438/98-1201	Reservoir "P"																2,605
D-438/98-1201	Jesse Bitter Stock Tank																64
D-438/98-1201	Reservoir "M"																5
D-438/98-1201	Dave Weyler																103
D-438/98-1301	Hager Main Reservoir																32
D-438/98-1301	Carlton O. and Ethyl																455
D-438/98-1301	Arundel Reservoir																38
D-438/98-1301	Carlton O. and Ethyl																103
D-438/98-1301	A. House																32
D-438/98-1301	Carlton O. and Ethyl																455
D-438/98-1301	A. House																38
D-438/98-1301	Carlton O. and Ethyl																103
D-438/98-1301	Reservoir "P"																20
D-438/98-1301	Timbered Ridge Reservoir																85
D-438/98-1301	A. House																100
D-438/98-1301	Carlton O. and Ethyl																659
D-438/98-1301	Madon National Forest																
D-438/98-1301	Carlton O. and Ethyl																
D-438/98-1301	A. House																
D-438/98-1301	Dry Valley Reservoir																
D-438/98-1301	Steele Swamp Ranch																
D-438/98-1301	Steele Swamp Ranch																
D-438/98-1301	Steele Swamp Ranch																

TABLE 6 (Continued)
IRRIGATED LANDS, 1959
(In acres)

Division or other source serving irrigated lands		Pasture				Grain Crops	Truck Crops				Other	Total Irrigated Follow	Total		
Division Location	Division Name or Owner	Alfalfa & Lucerne	Clover (Seed)	Clover (Seed)	Mixed (Seed)		Native Water Table	Onions & Garlic	Potatoes	Flowers & Nursery				Miscellaneous	
BOLES SUBUNIT (Continued)															
H D B & N	D-476/106-601	Wild Horse Reservoir												34	34
	D-476/106-1301	Ranchall Reservoir												114	114
	D-476/106-1401	Buffalo Reservoir												32	32
	D-476/106-1651	Picnic Grove Reservoir												43	43
	D-476/106-2581	June Reservoir				247								265	265
	D-476/112-5A1	Nodoc National Forest												7	7
	D-476/112-2001	Edgart Brothers, Inc.												59	59
	D-476/112-2002	Edgart Brothers, Inc.												24	24
	D-476/112-2301	Nodoc National Forest												330	330
	D-476/122-2801	Pearse Flat Reservoir												17	17
	D-482/98-3301	Warm Springs Ditch												10	10
	D-482/106-2301	Happy Valley Reservoir												61	61
	D-482/106-2801	Buchanan Flat Reservoir												471	471
	D-482/106-3301	Weed Valley Reservoir												5,756	5,756
D-482/106-3401	Edgart Brothers, Inc.												0	0	
Totals:		0	0	0	247	0	5,756	0	0	0	0	0	6,003	6,367	6,367
		0	0	0	247	0	5,756	0	0	0	0	0	6,003	6,367	6,367
BUTTE CREEK SUBUNIT															
D-429/10-1501	Cladya Hart					19							19	19	19
D-429/10-1501	Cladya Hart							128					128	128	128
D-429/10-1501	Cladya Hart							9					9	9	9
D-429/10-1501	Mayville B. Mills							242					242	242	242
D-429/98-101	Pease Spring Ditch							37					37	37	37
D-429/98-101	Ellis J. Louis							434					434	434	434
D-429/98-101	Double Spring Ditch														
D-429/98-101	Ellis J. Louis														
D-429/98-101	Ellis J. Louis														
D-429/98-101	Ellis J. Louis														
D-429/98-101	Ellis J. Louis														
D-429/98-101	Ellis J. Louis														
D-429/98-101	Ellis J. Louis														
D-429/98-101	Ellis J. Louis														
D-429/98-101	Ellis J. Louis														
D-429/98-101	Ellis J. Louis														
D-429/98-101	Ellis J. Louis														
D-429/98-101	Ellis J. Louis														
D-429/98-101	Ellis J. Louis														
D-429/98-101	Ellis J. Louis														
D-429/98-101	Ellis J. Louis														
D-429/98-101	Ellis J. Louis														
D-429/98-101	Ellis J. Louis														
D-429/98-101	Ellis J. Louis														
D-429/98-101	Ellis J. Louis														
D-429/98-101	Ellis J. Louis														
D-429/98-101	Ellis J. Louis														
D-429/98-101	Ellis J. Louis														
D-429/98-101	Ellis J. Louis														
D-429/98-101	Ellis J. Louis														
D-429/98-101	Ellis J. Louis														
D-429/98-101	Ellis J. Louis														
D-429/98-101	Ellis J. Louis														
D-429/98-101	Ellis J. Louis														
D-429/98-101	Ellis J. Louis														
D-429/98-101	Ellis J. Louis														
D-429/98-101	Ellis J. Louis														
D-429/98-101	Ellis J. Louis														
D-429/98-101	Ellis J. Louis														
D-429/98-101	Ellis J. Louis														
D-429/98-101	Ellis J. Louis														
D-429/98-101	Ellis J. Louis														
D-429/98-101	Ellis J. Louis														
D-429/98-101	Ellis J. Louis														
D-429/98-101	Ellis J. Louis														
D-429/98-101	Ellis J. Louis														
D-429/98-101	Ellis J. Louis														
D-429/98-101	Ellis J. Louis														
D-429/98-101	Ellis J. Louis														
D-429/98-101	Ell														

TABLE 6 (Continued)

IRRIGATED LANDS, 1959

(In acres)

Division or other sources serving irrigated lands	Division Name or Owner	Pasture				Field Crops	Truck Crops				Other	Total Irrigated	Irrigated Idle or Fallow	Total	
		Alfalfa & Mixtures	Clover	Clover (Seed)	Mixed (Seed)		Mixed (Seed)	Native	Improved High Water Table	Grain					Field Crops
BUTTE CREEK SUBUNIT (Continued)															
M D B & M	Ellis J. Louie							26					26		26
	D-439/24-2651														
	D-439/24-2652														
	Ellis J. Louie							145					145		145
	D-439/24-2660														
	Ellis J. Louie														
	D-439/24-2763														
	Ellis J. Louie														
	D-439/24-3481														
	Ellis J. Louie														
	D-439/24-3491														
D-439/24-2761	Ellis J. Louie						14						14		14
D-439/12-701	John Wilson Lamender Sr.	10											10	234	244
D-439/12-701	(Antelope Creek Subunit)														
D-439/14-481	Orr Lower Ditch														
D-439/14-581	Southern Pacific R.R.														
D-439/14-583	Southern Pacific R.R.														
D-439/14-582	Southern Pacific R.R.														
D-439/14-583	Southern Pacific R.R.														
D-439/14-1361	Eric R. Johnson														
D-439/14-1361	Eric R. Johnson														
D-439/14-2001	Orr Brothers Inc.														
D-439/14-2002	Orr Brothers Inc.														
D-439/14-2001	Orr Brothers Inc.														
D-439/14-2221	Bray House Ditch										31				31
D-439/24-2481	Ray Soule														
D-439/24-2482	Ray Soule														
D-439/24-2483	Soule Middle Ditch														
D-439/24-2484	Soule Upper No. Ditch														
D-439/24-2485	Soule Middle Ditch														
D-439/24-2486	Ray Soule														
D-439/24-2487	Soule Lower No. Ditch														
D-439/24-2490	Orr Davis														
D-439/24-2490	Orr Davis														
D-439/24-2501	International Paper Co.														
D-439/24-2511	Davis Chain Ditch														
Totals:	Surface Water Supply (All in Stanislaus County)	10	0	0	0	0	0	0	33				0	0	0
	No lands irrigated by ground water.														
									</						

TABLE 6 (Continued)

IRRIGATED LANDS, 1959

(In acres)

Overseer Location	Overseer Name or Owner	Pasture				Grain	Field Crops	Truck Crops				Other	Total Irrigated Follow	Total	
		Alfalfa & Matures	Clover (Seed)	Mixed (Seed)	Mixed (Seed)			Induced High Water Table	Onions & Garlic	Potatoes	Flowers & Nursery				Miscellaneous
BUTTE VALLEY SUBUNIT															
M. D. B. & N.							7								
D-437/14-1381	Ralph Lutz			226		8						8 ^a	241	241	
D-438/14-1381	Walter Robison			239		134							401	401	
D-439/14-1381	Walter Robison												4,047 ^b	4,162 ^b	
D-440/14-1381	High-Mead Canal	971 ^b	18 ^b	661 ^b		150 ^b	1,316 ^b		742 ^b	3 ^b			135 ^b	135 ^b	
D-441/14-1381	Boyes Ranch Ditch			78 ^b			5,523 ^b						3,490 ^b	3,625 ^b	
D-442/14-1381	Neisa Ranch														
D-443/14-1381	Neisa Ranch														
D-444/14-1381	Neisa Ranch														
D-445/14-1381	Neisa Ranch														
D-446/14-1381	Neisa Ranch														
D-447/14-1381	Neisa Ranch														
D-448/14-1381	Neisa Ranch														
D-449/14-1381	Neisa Ranch														
D-450/14-1381	Neisa Ranch														
D-451/14-1381	Neisa Ranch														
D-452/14-1381	Neisa Ranch														
D-453/14-1381	Neisa Ranch														
D-454/14-1381	Neisa Ranch														
D-455/14-1381	Neisa Ranch														
D-456/14-1381	Neisa Ranch														
D-457/14-1381	Neisa Ranch														
D-458/14-1381	Neisa Ranch														
D-459/14-1381	Neisa Ranch														
D-460/14-1381	Neisa Ranch														
D-461/14-1381	Neisa Ranch														
D-462/14-1381	Neisa Ranch														
D-463/14-1381	Neisa Ranch														
D-464/14-1381	Neisa Ranch														
D-465/14-1381	Neisa Ranch														
D-466/14-1381	Neisa Ranch														
D-467/14-1381	Neisa Ranch														
D-468/14-1381	Neisa Ranch														
D-469/14-1381	Neisa Ranch														
D-470/14-1381	Neisa Ranch														
D-471/14-1381	Neisa Ranch														
D-472/14-1381	Neisa Ranch														
D-473/14-1381	Neisa Ranch														
D-474/14-1381	Neisa Ranch														
D-475/14-1381	Neisa Ranch														
D-476/14-1381	Neisa Ranch														
D-477/14-1381	Neisa Ranch														
D-478/14-1381	Neisa Ranch														
D-479/14-1381	Neisa Ranch														
D-480/14-1381	Neisa Ranch														
D-481/14-1381	Neisa Ranch														
D-482/14-1381	Neisa Ranch														
D-483/14-1381	Neisa Ranch														
D-484/14-1381	Neisa Ranch														
D-485/14-1381	Neisa Ranch														
D-486/14-1381	Neisa Ranch														
D-487/14-1381	Neisa Ranch														
D-488/14-1381	Neisa Ranch														
D-489/14-1381	Neisa Ranch														
D-490/14-1381	Neisa Ranch														
D-491/14-1381	Neisa Ranch														
D-492/14-1381	Neisa Ranch														
D-493/14-1381	Neisa Ranch														
D-494/14-1381	Neisa Ranch														
D-495/14-1381	Neisa Ranch														
D-496/14-1381	Neisa Ranch														
D-497/14-1381	Neisa Ranch														
D-498/14-1381	Neisa Ranch														
D-499/14-1381	Neisa Ranch														
D-500/14-1381	Neisa Ranch														
D-501/14-1381	Neisa Ranch														
D-502/14-1381	Neisa Ranch														
D-503/14-1381	Neisa Ranch														
D-504/14-1381	Neisa Ranch														
D-505/14-1381	Neisa Ranch														
D-506/14-1381	Neisa Ranch														
D-507/14-1381	Neisa Ranch														
D-508/14-1381	Neisa Ranch														
D-509/14-1381	Neisa Ranch														
D-510/14-1381	Neisa Ranch														
D-511/14-1381	Neisa Ranch														
D-512/14-1381	Neisa Ranch														
D-513/14-1381	Neisa Ranch														
D-514/14-1381	Neisa Ranch														
D-515/14-1381	Neisa Ranch														
D-516/14-1381	Neisa Ranch														
D-517/14-1381	Neisa Ranch														
D-518/14-1381	Neisa Ranch														
D-519/14-1381	Neisa Ranch														
D-520/14-1381	Neisa Ranch														
D-521/14-1381	Neisa Ranch														
D-522/14-1381	Neisa Ranch														
D-523/14-1381	Neisa Ranch														
D-524/14-1381	Neisa Ranch														
D-525/14-1381	Neisa Ranch														
D-526/14-1381	Neisa Ranch														
D-527/14-1381	Neisa Ranch														
D-528/14-1381	Neisa Ranch														
D-529/14-1381	Neisa Ranch														
D-530/14-1381	Neisa Ranch														
D-531/14-1381	Neisa Ranch														
D-532/14-1381	Neisa Ranch														
D-533/14-1381	Neisa Ranch														
D-534/14-1381	Neisa Ranch														
D-535/14-1381	Neisa Ranch														
D-536/14-1381	Neisa Ranch														
D-537/14-1381	Neisa Ranch														
D-538/14-1381	Neisa Ranch														
D-539/14-1381	Neisa Ranch														
D-540/14-1381	Neisa Ranch														
D-541/14-1381	Neisa Ranch														
D-542/14-1381	Neisa Ranch														
D-543/14-1381	Neisa Ranch														
D-544/14-1381	Neisa Ranch														
D-545/14-1381	Neisa Ranch														
D-546/14-1381	Neisa Ranch														
D-547/14-1381	Neisa Ranch														
D-548/14-1381	Neisa Ranch														
D-549/14-1381	Neisa Ranch														
D-550/14-1381	Neisa Ranch														
D-551/14-1381	Neisa Ranch														
D-552/14-1381	Neisa Ranch														
D-553/14-1381	Neisa Ranch														
D-554/14-1381	Neisa Ranch														
D-555/14-1381	Neisa Ranch														
D-556/14-1381	Neisa Ranch														
D-557/14-1381	Neisa Ranch														
D-558/14-1381	Neisa Ranch														
D-559/14-1381	Neisa Ranch														
D-560/14-1381	Neisa Ranch														
D-561/14-1381	Neisa Ranch														
D-562/14-1381	Neisa Ranch														
D-563/14-1381	Neisa Ranch														
D-564/14-1381	Neisa Ranch														
D-565/14-1381	Neisa Ranch														
D-566/14-1381	Neisa Ranch														
D-567/14-1381															

TABLE 6 (Continued)

IRRIGATED LANDS, 1959

(In acres)

Diversion Location	Diversion Name or Owner	Pasture					Grain Crops	Truck Crops				Other	Total Irrigated Acre or Value	Total		
		Alfalfa & Melons	Clover	Clover (Seed)	Mixed (Seed)	Mixed (Seed)		Native	Irrigated High Water Table	Onions & Garlic	Potatoes				Flowers & Nursery	Miscellaneous
CLEAR LAKE SUBUNIT (Continued)																
H. D. B. & M.	D-489/98-2391	Wilson Ranch						66						66	66	
	D-489/98-2392	Wilson Ranch						12						12	12	
	D-489/98-2393	Wilson Ranch						81						81	81	
	D-489/98-2394	Owen Springs Ditch						1,733	0	0	0	0	0	1,733	1,873	
	Totals:	Subsists (all in Madoc Co.)	60	0	0	0	0	1,733	0	0	0	0	0	1,733	1,873	
MOUNT DOME SUBUNIT																
H. D. B. & M.	D-489/98-2391	Remond Ranch						558						558	558	
	D-489/98-2392	Remond Ranch						864						864	864	
	D-489/98-2393	Remond Ranch						149						149	149	
	D-489/98-2394	Perry A. Langer						94						94	94	
	D-489/98-2395	Perry A. Langer						206						206	206	
	D-489/98-2396	Perry A. Langer						302						302	302	
	D-489/98-2397	Charles E. and Lucinda Cross						6						6	6	
	D-489/98-2398	Billie Brothers						301						301	301	
	D-489/98-2399	Mary Porterfield						160						160	160	
	D-489/98-2400	Mary Porterfield						131						131	131	
H. D. B. & M.	D-489/98-2401	John Thackara						101						101	101	
	D-489/98-2402	John Thackara						237						237	237	
	D-489/98-2403	Don O'Keefe						259						259	259	
	D-489/98-2404	Don O'Keefe						16						16	16	
	D-489/98-2405	G. W. Reigman						95						95	95	
	D-489/98-2406	G. W. Reigman						111						111	111	
	D-489/98-2407	G. W. Reigman						111						111	111	
	D-489/98-2408	G. W. Reigman						111						111	111	
	D-489/98-2409	G. W. Reigman						111						111	111	
	D-489/98-2410	G. W. Reigman						111						111	111	

TABLE 6 (Continued)

IRRIGATED LANDS, 1959

(In acres)

Overseer Location	Division Name or Owner	Pasture					Field Crops		Truck Crops				Other	Total Irrigated Acre or Follow	Total	
		alfalfa & Mixtures	Clover	Clover (Seed)	Mixed	Mixed (Seed)	Native	Induced High water table	Grain	Onions & Garlic	Potatoes	Flowers & Nursery				Miscellaneous
Totals:	Surface Water Supply	5,016	100	2,334	2,843	181	0	0	45,387	887	797	10,652	35	201	67,833	68,173
	Ground Water Supply	3	0	0	37	0	0	0	22	0	0	0	0	0	62	65
	Combined Surface and Ground Water	5,019	100	2,334	2,880	181	0	0	45,409	887	797	10,652	35	201	67,895	68,237
	Subunit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Modoc County	3,787	0	1,678	1,642	165	0	0	23,140	688	461	7,090	0	201	38,859	39,184
MODOC COUNTY	Starkyou County	1,232	100	656	638	16	0	0	22,269	199	336	3,562	35	0	29,043	29,091
	Surface Water Supply	3,847	0	1,678	1,889	165	0	7,489	23,140	688	461	7,090	0	201	46,546	47,424
	Ground Water Supply	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	3,847	0	1,678	1,889	165	0	7,489	23,140	688	461	7,090	0	201	46,546	47,424
	Surface Water Supply	2,556 ^b	118 ^b	1,317 ^b	1,740 ^b	16	733 ^b	14,172 ^b	43,952 ^b	235	336	4,304 ^b	38 ^b	0	69,688 ^b	72,559 ^b
STARKYOU COUNTY	Ground Water Supply	4,160	115	801	1,359	22	13	288	2,477	46	0	1,662	122	0	10,981	12,222
	Total	6,716	233	2,188	3,119	38	746	14,460	46,430	281	336	5,956	160	0	80,569	84,379
	Surface Water Supply	5,198	100	2,334	3,384	181	553	20,977	62,484	923	797	10,652	35	201	108,327	111,385
	Ground Water Supply	4,160	115	801	1,359	22	13	288	2,477	46	0	1,662	122	0	10,981	12,222
	Combined Surface and Ground Water Supply	9,358	215	3,135	4,743	203	566	21,265	64,961	969	797	12,314	157	201	119,308	123,607
LOST RIVER-BUTTE VALLEY IRRIGATORSHIP UNIT	Surface Water Supply	1,205	18	661	895	0	180	684	4,121	0	0	742	3	0	7,959	8,166
	Ground Water Supply	10,563	233	3,796	5,008	203	746	21,889	69,582	969	797	12,056	160	201	127,217	131,803
	Total	11,768	251	4,457	5,903	203	926	22,573	73,703	969	797	13,056	160	201	127,217	131,803
	Surface Water Supply	1,205	18	661	895	0	180	684	4,121	0	0	742	3	0	7,959	8,166
	Ground Water Supply	10,563	233	3,796	5,008	203	746	21,889	69,582	969	797	12,056	160	201	127,217	131,803

a - Includes fruit.

b - Includes supplemental supply of ground water.

c - Includes 16 acres of partially irrigated land.

d - These 46 acres are of grain sorghum.

e - These 6 acres are of irrigated grain in a cemetery.

g - Irrigation occurs by flooding adjacent lands and cannot be attributed to a specific diversion.

h - There is no specific diversion point for this system.

j - These 36 acres are of flax.

k - The lands indicated here are within Tulalake Irrigation District.

Dry-farmed Lands

Dry-farmed lands are those lands normally in crop but which do not receive applied water. This includes all lands so farmed whether or not a crop is produced in the year of survey. These lands are called "idle" if entirely uncultivated in the year of survey, and "fallow" if tilled but without a crop at the time of survey. Lands which appeared to have been idle for more than 3 years and have reverted to native vegetation were so mapped.

It should be noted that the term "dry-farmed" as used herein refers to the farming practice of these lands and not to a lack of soil moisture.

Urban Lands

Urban lands include the total areas of towns, small communities, and industrial plots which are large enough to be delineated. Also included are parks, golf courses, racetracks, and cemeteries within or near urban areas. The reported acreages of urban land use represent gross delineations, including streets and vacant lots, and are therefore not necessarily fully developed at the present time. In this survey the boundaries of urban communities were delineated to include all lands with a density of one house or more per 2 acres.

Recreational Lands

Recreational lands were mapped on aerial photographs in the field in four categories: (1) residential, (2) commercial, (3) camp and trailer sites, and (4) parks. Recreational "residential" lands include permanent and summer home tracts

within primarily recreational areas. The estimated density of homes per acre was also indicated in the course of the survey. Recreational "commercial" lands include those containing motels, resorts, hotels, stores, restaurants, and similar commercial establishments in primarily recreational areas. Lands mapped in the "camp and trailer sites" category include those areas so used within primarily recreational areas but outside the boundaries of public parks. The entire areas within the designated boundaries of public park-type areas such as Lava Beds National Monument were included in the "parks" category.

Obviously, nearly all of the mountainous, seashore, and water surface areas are suitable for some recreational use such as hunting, fishing, hiking, and picnicking. For the purpose of this land use survey, however, except for "parks", a recreational use was reported only on those lands where some fairly intensive development requiring water service was located.

The recreational lands are tabulated in Table 5 by the above categories, but no lands in the "commercial" category were present. All the 1959 recreational land use (categories 1, 3, and 4) are the same color on Plate 2.

Native Vegetation

Lands which are essentially in a native state, and not included in any of the above categories, as well as scattered residences and other isolated uses too small to be delineated, were mapped as "native vegetation". However, in addition to the lands so mapped, the total acreage reported in this native vegetation category includes lands which were mapped as water surface

and farm building areas, including dairies, feed lots, etc. The total of all these lands was some 1,247,580 acres or about 84 percent of the Lost River-Butte Valley Hydrographic Unit. Most of these lands, even in their native state, are used for commercial timber production, livestock range, and/or recreational activities such as fishing, hunting, hiking, and picnicking.

CHAPTER IV. CLASSIFICATION OF RECREATIONAL LANDS

This chapter reports the procedures and results of a survey of the Lost River-Butte Valley Hydrographic Unit in which the lands of the unit were classified as to suitability for recreational use. In this survey, two general groups of recreational lands were mapped: (1) those already developed or designated for recreational use, as mapped in the land use survey, and (2) those which were found to be well suited for future recreational uses requiring water service.

Scope of the Survey

In most areas, the land classification surveys for Series No. 94 bulletins are concerned primarily with the irrigable classes and secondarily with the recreational classes. In the Lost River-Butte Valley Hydrographic Unit, the irrigable lands were mapped in 1953 in connection with formulation of the Klamath River Compact, but recreational lands were not mapped at that time. For this report, therefore, the irrigable lands were not resurveyed; but, to make the whole survey comparable to that in other units, the survey of recreational lands was performed in 1960, and is the subject of this chapter.

The Klamath River Compact, as approved, specifies that after its adoption in April 1957, water for irrigation of no more than 100,000 acres may be appropriated in the unit. This limitation definitely eliminated the need for a new survey of irrigable lands under this investigation. Results of the 1953

survey were published in Bulletin No. 58, "Northeastern Counties Investigation", June 1960, and in Bulletin No. 83, "Klamath River Investigation", July 1964.

Methods and Procedures

The mapping procedure in this survey was similar in most respects to that described in Chapter III for land use. All parts of the unit were examined to locate those parcels meeting the standards for the various classes described in Table 7. On-the-spot identification and delineation of the selected land areas were made on aerial photographs. In this process, plans of the U. S. Forest Service were also considered. The procedure for acreage determinations employed for this survey was also the same as described in Chapter III for land use.

TABLE 7
STANDARDS FOR CLASSIFICATION OF RECREATIONAL LANDS

Land Class :		
Symbol	:	Characteristics
RR	-	Existing and potential permanent and summer home tracts within a primarily recreational area. The estimated number of houses per acre, under conditions of full development, is indicated by a number in the symbol, e.g., RR-3 is suitable for three houses per acre.
RC	-	Existing and potential commercial areas which occur within a primarily recreational area and which include motels, resorts, hotels, stores, etc.
RT	-	Existing and potential camp and trailer sites within a primarily recreational area.
PP*	-	Existing racetracks, fairgrounds, and private, city, county, state, and federal parks and monuments.

* In this unit, this category includes only the area encompassed by Lava Beds National Monument.

Recreational Land Classes

Present trends indicate an expanding rate of use and demand for recreational facilities throughout the State. In view of these trends and the ever-increasing population, it is recognized that there will be a demand for substantial land areas for recreational purposes. This is particularly true of the mountains and undeveloped regions where recreational use is expanding rapidly at the present time.

Generally speaking, all mountainous and timbered lands are suitable for some recreational use such as hunting, fishing, and similar outdoor activities. For purposes of this survey, however, lands classified for recreational use are limited to those which are now, or may be in the future, used intensively for permanent and summer home tracts, camp and trailer sites, and areas designated as parks outside of urban areas. These are lands requiring significant water service, except for areas preserved essentially in their historical state as "Parks".

Primary considerations for classification of home tracts and camp and trailer sites were (1) such physical factors as soil depth, slope, and rockiness; (2) such aesthetic values as view, nearness to lakes, streams, or seashore, or density and type of forest canopy suitable for the respective uses; and (3) the plans of federal and state officials. The availability of a water supply was an important factor in the selection of potential camp and trailer sites, but remoteness from roads did not influence site selection.

The "Parks" category includes the total areas of existing federal and state parks and monuments, rather than the

specific areas of intensive development therein. For other parks -- county, city, etc. -- only the areas presently developed to intensive recreational use were delineated.

The acreages of the various recreational classes are reported in Table 8. On Plate 2, which shows the 1959 land use, the undeveloped but potential recreational lands mapped in this survey are also indicated.

TABLE 8
CLASSIFICATION OF RECREATIONAL LANDS

(In Acres)

<u>Subunit and County</u>	<u>RR</u>	<u>RT</u>	<u>RC</u>	<u>PP</u>	<u>Total</u>
Antelope Creek Siskiyou	300	210	0	0	510
Boles Modoc	20	180	0	0	200
Butte Creek Siskiyou	220	840	0	0	1,060
Butte Valley Siskiyou	0	70	10	0	80
Clear Lake Modoc	0	10	0	0	10
Mount Dome Siskiyou	0	20	0	8,970	8,990
Tule Lake Modoc	0	0	0	2,850	2,850
Siskiyou	0	0	0	34,630	34,630
Subunit Total	0	0	0	37,480	37,480

SUMMARY

Modoc County	20	190	0	2,850	3,060
Siskiyou County	<u>520</u>	<u>1,140</u>	<u>10</u>	<u>43,600</u>	<u>45,270</u>
Hydrographic Unit Total	540	1,330	10	46,450	48,330

CHAPTER V. SUMMARY

This bulletin presents the results of three surveys -- water use, land use, and recreational land classification -- conducted in 1958 through 1960 in the Lost River-Butte Valley Hydrographic Unit. The report is one of a series which present similar data for the whole State. When completed, the data presented in this series will be an essential basis for determination of future water requirements of the various watersheds of the State. A second series of bulletins will present these requirements and, by relating them to the local water resources, will report the amount of water surplus or deficiency in each area.

The water use survey consisted of obtaining data about diversion systems in the unit which normally divert 10 acre-feet or more of surface water per year. A total of 160 systems were located, with past and present ownership, water use, water rights, and other pertinent data obtained for each. The numbers of diversions serving various purposes were as follows:

<u>Major Purposes Served</u>	<u>Number</u>
Irrigation	148
Stockwatering	8
Ground Water Recharge	1
Export from Unit	3

Most diversions for irrigation also serve for stockwatering, and a few for domestic uses.

The lands irrigated in 1959 were mapped in the land use survey, and their sources of water identified. Of 127,200 acres irrigated in the unit in 1959, 40,700 acres received surface water only, 11,000 received ground water only, and 7,900 received surface and ground water combined. The remaining 67,600 acres, within Tulélake Irrigation District, received principally surface water, but ground water was also applied in some localities which were not identified in this survey. An additional 4,600 acres usually irrigated were idle or fallow in 1959. The total 131,800 acres subject to irrigation represents 8.9 percent of the unit.

Other data from the land use survey are summarized in the following acreages of various crops and uses:

<u>Irrigated Lands</u>		
	<u>Acres</u>	<u>Percent of Lands Irrigated</u>
Grain	69,580	52.8
Alfalfa	10,560	8.0
Clover	4,030	3.1
Mixed Pasture	5,210	3.9
Native Pasture (direct irrigation)	740	0.6
Native Pasture (induced high-water table)	21,890	16.6
Field Crops	970	0.7
Potatoes	13,060	9.9
Other Truck Crops, etc.	1,170	0.9
Idle or Fallow	<u>4,590</u>	<u>3.5</u>
Total under Irrigation	131,800	100.0

Other Uses

	<u>Acres</u>
Dry-farmed Lands	40,100
Urban Lands	1,570
Recreational Lands	
Lava Beds National Monument	46,330
Other	105

The classification of recreational lands was conducted in 1960 in a manner similar to the land use survey. Outside the Lava Beds National Monument, 1,575 acres were found to be well suited to recreational uses which would require water service.

APPENDIX A

LEGAL CONSIDERATIONS

TABLE OF CONTENTS

	<u>Page</u>
California Water Rights	77
Riparian Rights	78
Overlying Rights	79
Appropriative Rights	80
Prescriptive Rights	83
Determination of Rights	85
Litigation Concerning Local Water Rights	85
Churchill vs. Louie	86
Butte Valley Irrigation District vs. Bray, et al. . .	86
Applications to Appropriate Water	87

TABLES

Table No.

A-1	Applications to Appropriate Water in Lost River-Butte Valley Hydrographic Unit	88
-----	--	----

APPENDIX A

LEGAL CONSIDERATIONS

The following paragraphs present brief explanations of California water rights law. They supplement and provide a background for the information on water rights contained in Chapter II. Also included is a tabulation of active applications to appropriate water within Lost River-Butte Valley Hydrographic Unit filed with the State Water Rights Board, as of January 25, 1965.

California Water Rights

In California, water rights convey only the right to use water. Until absolute possession of water is acquired by some artificial means, no one owns water. However, the owner of water rights is entitled to enjoy them without interference by other users who have rights which are inferior to his.

Five kinds of water rights are recognized in California. These are riparian, overlying, appropriative, prescriptive, and pueblo. Riparian rights attach to surface water and water flowing in known and definite subterranean channels, while overlying rights attach only to underground water. Appropriative and prescriptive rights may be acquired in either surface or underground waters. Pueblo rights are now exercised in California only by the cities of Los Angeles and San Diego, each of which has a paramount right to satisfy its full needs from the stream system

of waters flowing by the former Mexican pueblo from which each sprang.

All water rights, both to surface and to underground water, are subject to the doctrine of reasonable beneficial use expressed in Section 3 of Article 14 of the California Constitution, and Water Code Sections 100 and 101. This doctrine limits water rights to the quantity of water reasonably required for beneficial use and prohibits waste, unreasonable use, and unreasonable methods of use or diversion.

Riparian Rights

A riparian right entitles the owner of lands which border or front on a watercourse to take water therefrom for use on such lands within the same watershed. However, the rights of the owner of riparian land are limited to the reasonable beneficial use of the natural flow of water which passes his land. Riparian rights pass with the title to the land, unless expressly reserved or excepted from the interests transferred, and are not gained by use or lost by mere nonuse. Although the land must be contiguous to the watercourse, the length of the frontage is not determinative of the rights; a large tract with a small frontage on a stream may be riparian to the stream. But the original grant determines the character of the land, and only the smallest contiguous tract held under a single title retains riparian rights.

A riparian owner has no right to any specified amount of the water of a stream as against other riparian owners. He

has rights only to a reasonable share from the stream -- a correlative right which he shares mutually with other riparian owners. In the event of insufficient water for all, the available supply must be apportioned, except that an upper riparian owner may take the whole supply if necessary for domestic use. As against appropriators, the riparian owner has the paramount right to all the water of the stream which he can put to reasonable beneficial use, but that is the extent of his rights, and the appropriator can take the surplus.

Riparian rights do not authorize use of water on non-riparian land, nor do they permit the seasonal storage of water. Neither do they prevent temporary appropriation by others of water not presently needed for use on riparian land.

A parcel of land becomes nonriparian when severed from land bordering the stream, unless the riparian rights are reserved for the severed parcel by the grantor. Riparian rights may be destroyed when purportedly transferred apart from the land by grant, contract, or condemnation, and may be impaired or lost through prescription.

Overlying Rights

Owners of lands overlying a common underground water supply have the right to withdraw water for reasonable beneficial use on their overlying lands. Such overlying rights are analogous to riparian rights, in that both are based on ownership of land contiguous to the supply and the rights of each overlying or riparian owner are mutual and correlative to the rights of all

other owners of lands similarly related to the supply. In the case of insufficient water to fully supply the requirements of all, the available supply must be equitably apportioned.

Overlying rights do not include use of water on non-overlying land. However, surplus water not presently required for beneficial use on overlying land, and which may be withdrawn without creating an overdraft on the ground water supply, may be appropriated for use on nonoverlying land. But the overlying rights are paramount and all appropriative rights are subject to the future requirements of overlying land.

Appropriative Rights

An appropriation of water is any taking of water for use without riparian or overlying rights thereto, whether such taking is from the underground by wells or from surface streams by direct diversion or storage. An appropriator, in the legal sense, is one who takes water without possessing rights which are based on the ownership of land. As between appropriators, the one first in time is first in right. A prior appropriator may take all the water he needs up to the full amount to which he is entitled before a later appropriator may take any.

Normally, appropriative rights are inferior to riparian rights. An exception to this is the case of an appropriation of water diverted from streams flowing through vacant public lands before the riparian lands were withdrawn from the domain of the United States. The appropriative diversions or the lands they serve may be either upstream or downstream from the riparian lands.

Any water not needed for the reasonable beneficial uses under prior rights to a supply may properly be appropriated. The priority of an appropriative right, as against another appropriator, is related back to the first substantial act toward putting the water to use or to the date of application. Sections 1410 through 1422 of the Civil Code, enacted in 1872, established, as the first statutory regulation, a permissive procedure for perfecting an appropriation of surface water. Provision was made for posting a notice of appropriation at the proposed point of diversion and recording a copy with the county recorder. If the statutory procedure were followed and the appropriation completed with due diligence, priority related back to the date of posting; otherwise, priority was established only when the water was put to beneficial use.

Since the effective date of the Water Commission Act of 1913, December 19, 1914, appropriation of surface water and water in subterranean streams flowing in known and definite channels has been by compliance with required statutory procedure. An appropriation of such water now can be made in accordance with the provisions of Part 2, Division 2 of the Water Code (Water Code Sections 1200 to 1801). An application to appropriate unappropriated water must be filed with the State Water Rights Board. If the application is approved, a permit is issued authorizing the appropriation. When the appropriation has been completed, an inspection is made and a license is issued, to the extent of beneficial use, provided the terms and conditions of the permit have

been fulfilled. The priority of a permit or license relates back to the date of the application.

A right to appropriate water may be lost either by abandonment or by continuous nonuse. To constitute abandonment, there must be concurrence of act and intent, wherein possession is relinquished with no intent to resume it for a beneficial use. Abandonment is, therefore, always voluntary and factual. In the case of an appropriation initiated prior to 1914, continuous nonuse for a period of five years results in the loss of appropriative water rights. In the case of appropriative rights acquired pursuant to the Water Commission Act or the Water Code, continuous nonuse for a period of only three years may result in loss of such rights.

Where ground water and surface water are interconnected, one acting as a tributary to the other, both are treated as part of a common supply and users of water from either source are entitled to protection from substantial injury as a result of use by others of water from the other source. Thus, an owner of land riparian to a stream may have his right to the use of water protected against impairment by an appropriator of percolating ground water tributary to the stream and required for the maintenance and support of its flow. Likewise, where water from a stream percolates to a ground water basin or stratum, the owner of land overlying the ground water supply may be protected from an appropriation of water from the stream if this causes a substantial impairment of the ground water supply. As between riparian use of

surface water and overlying use of ground water tributary to the stream, a sharing of the available water supply on the basis of reasonable beneficial use should be made.

Surplus ground water not flowing in known and definite subterranean channels is still present in many areas of the State. Such surplus water may be appropriated for use on nonoverlying lands simply by extracting it and putting it to beneficial use. In Southern California, adjudication of some basins prohibits further appropriation of ground water therefrom. In Los Angeles, Riverside, San Bernardino and Ventura Counties, reporting of ground water pumped is required under certain conditions.

Prescriptive Rights

It is possible to appropriate surface or ground water which is presently needed by others to satisfy riparian, overlying, or prior appropriative rights. Such appropriations may ripen into prescriptive rights where the use is actual, open and notorious, hostile and adverse to the original owners, continuous and uninterrupted for the statutory period of five years, made under claim of right, and with payment of taxes whenever such have been levied on the water rights. Absence of any of these essentials precludes the acquisition of prescriptive water rights.

Prescription thus requires that, for a period of five years, the rightful owner either knows or should know of the adverse taking, and fails to take any physical or legal steps to interrupt such taking. Irrespective of the needs or demands of the riparian, overlying, or prior appropriative user, an

absolute right to only a fixed amount of water may be acquired by prescription. The quantity of such a right is determined by beneficial use. However, present use is the measure of the prescriptive right, and future needs cannot be included.

Riparian rights, overlying rights, appropriative rights, and prescriptive rights may be lost or diminished by prescription. While there is sufficient water flowing in a stream to supply the wants of all parties, the use of the water by anyone does not deprive the others of their water supply. Such use is not an invasion of their rights and cannot, therefore, be a basis for a prescriptive right. The same principle applies to a downstream diversion of water as against the rights of an upstream riparian landowner or prior appropriator. At times when the safe yield of a ground water basin exceeds the needs of overlying landowners and appropriators, their prior rights are not invaded by a later appropriative taking of water from the underground supply. The later appropriation becomes adverse only when the ground water basin is overdrawn; that is, when the annual draft exceeds the safe annual yield. Although neither an overlying owner nor a prior appropriator may prevent a taking of surplus water, either the owner or the appropriator may institute legal proceedings to safeguard the supply once a surplus ceases to exist, and may enjoin any additional use beyond the point of safe yield. Since prescriptive rights can only be acquired to nonsurplus water, these rights cannot ordinarily be acquired against the future needs of riparian or overlying owners.

The prior appropriator, lower riparian, or overlying owner may protect his rights for his present needs against an

adverse appropriator by actually taking the needed water before the five-year period has run, or by the aid of the courts in the form of a declaratory judgment or injunction within the five-year period.

Determination of Water Rights

Under provisions of the Water Code, actions brought before either state or federal courts which involve determination of rights to the use of water may, at the court's discretion, be referred to the State Water Rights Board. Under provisions of Water Code Section 2000, the court may appoint the Board to referee "any or all issues involved in the suit", or under Section 2001, it may limit the reference to "investigations of and report upon any or all physical facts involved". This reference procedure may be followed in suits involving either surface or ground waters, or both.

An alternative procedure for adjudication of rights to the use of water of streams, lakes, and other bodies of water, is available upon petition to the State Water Rights Board, but the method excludes the determination of rights to take water from an underground supply other than from a subterranean stream flowing through known and definite channels. Water Code Sections 2500 to 2900, inclusive, authorize the initiation of such proceedings.

Litigation Concerning Local Water Rights

There have been no major adjudications of water rights in the Lost River-Butte Valley Hydrographic Unit. However, the

waters of Butte Creek have been the subject of litigation on two occasions.

Churchill vs. Louie

On January 5, 1905, the Superior Court of Siskiyou County decreed that the defendant is "prohibited from diverting any of the waters of said Butte Creek from their natural channel, or from in any manner interfering with the natural flow thereof when there is not to exceed one thousand inches of water, measured under a four inch pressure, flowing down said Butte Creek to ... the 'Boyes Ranch', or from doing any act or thing that will cause any amount of water less than one thousand inches, measured under a four inch pressure, of the waters of Butte Creek to flow down to said premises".

Butte Valley Irrigation District vs. Bray, et al.

This case was entered in the Superior Court of Siskiyou County in July 1924. The court issued a temporary injunction in favor of the plaintiff restricting the defendants to the use of specified amounts of water from Butte Creek. This injunction was in effect until the end of the 1925 irrigation season.

An "Order of Reference", issued on September 30, 1926, and amended the following June, requested a study and report be made by the State Division of Water Rights. An investigation of physical facts was conducted from April through August, 1927. By agreement of the parties to the case, the entire Butte Creek watershed was included in the investigation so that it might be fully adjudicated.

The Division's report, filed in August 1929, described 40 diversions from Butte Creek and its tributaries in operation at that time of the survey. This report, or Court Reference, included estimates of the water required for the service area of each diversion. Many of the same diversions were located in 1959 for this investigation and are described herein.

The Court Reference also compared the total water requirements along the creek with the normal full natural flow. The general conclusion of the report was that the water use practices in the Butte Creek watershed were not unreasonable or excessive. The final outcome of the suit was an out-of-court settlement without a decree adjudicating the stream.

Applications to Appropriate Water

Applications to appropriate water within the Lost River-Butte Valley Hydrographic Unit, filed with the State since 1914 and active on January 20, 1965, are summarized in Table A-1. For each application relative to a diversion reported in Chapter II the diversion location is included in the table. The status of each application as to the granting of a permit or license is also shown in the Table.

TABLE A-1
APPLICATIONS TO APPROPRIATE WATER IN
LOST RIVER - BUTTE VALLEY HYDROGRAPHIC UNIT
(Filed with State Water Rights Boards on January 20, 1965)

Application number and Status ^a	Date filed	Present owner	Division location number	Source	Location of point of diversion				Amount	Period of diversion	Purpose
					1/4	1/4	Sec.	T	R		
594 L 02/23/17		Bidart Brothers, Incorporated	D-47N/10E-25R1	Jones Flat Drainage Area	SE	SE	25	47N	10E		Oct. 1 - June 1 Irrigation
1174 L 10/06/19		I.C. & Roy V. Eversly	D-47N/12E-15N1	Flatcheen Creek	SW	SW	15	47N	12E		Nov. 1 - May 1 Irrigation
1880 L 06/23/21		Rennar and W. If	D-46N/10E-35N1	Willow Creek	Lot	1	03	46N	10E		Dec. 1 - June 30 Irrigation
2234 L 02/28/21		Butte Valley Irrigation Dist.	D-45N/24-12R1 D-45N/24-12R2	Butte Slough	SW	NW	17	45N	14		May 1 - Oct. 1 Irrigation Oct. 1 - July 1 Irrigation
9432 L 05/22/23		Bidart Brothers Incorporated	D-47N/10E-25R1	Jones Flat Drainage Area	SE	SE	25	47N	10E		Nov. 1 - June 1 Irrigation
3531 L 07/14/23		Bidart Brothers Incorporated	D-44N/11E-7N1	Dry Valley Creek	SW	SW	07	44N	11E		Jan. 1 - May 1 Irrigation
4459 L 08/14/24		Johnson Steak Company	D-47N/10E-25R1	Russell Canyon	NW	SE	20	48N	6E		Jan. 15 - May 1 Stockwatering
5312 L 12/16/26		Carlton O. & Ethel A. Rouse	D-46N/10E-35N1	Willow Creek	Lot	1	03	45N	10E		Dec. 1 - June 30 Irrigation
8925 L 03/05/27		Frank J., Jr. & C. Sullivan	D-48N/6E-26L1	Unnamed Stream	SE	SE	26	48N	6E		Mar. 1 - April 1 Irrigation, Stockwatering
10078 L 11/28/40		Loveness Lumber Company	D-48N/6E-20N1	Bull Spring Hooden Creek	NW	SW	20	48N	6E		Apr. 1 - Oct. 1 Irrigation, Stockwatering
11080 L 06/22/45		Robert E. Schildeoh	D-44N/1E-7C1	Antelope Creek	SE	SE	07	44N	1E		Apr. 1 - Oct. 1 Irrigation, Stockwatering
12708 L 03/23/48		U. S. Madoe National Forest		Bottle Creek Spring Bottle Creek Spring Bottle Creek Spring	NE	NE	27	45N	10E		Apr. 1 - Aug. 1 Irrigation, Stockwatering
12840 L 12/01/48		Frank J., Jr. & C. Sullivan	D-48N/6E-26L1	Unnamed Stream	SE	SW	26	48N	6E		Apr. 1 - Nov. 1 Stockwatering
13193 L 06/30/49		U. S. Madoe National Forest	D-48N/6E-35R1	Unnamed Stream	NW	NE	35	48N	6E		Jan. 1 - May 30 Irrigation, Recreational, Stockwatering
15467 P 03/31/53		Frank J., Jr. & C. Sullivan		Quaking Aspen Spring	NW	SE	11	49N	9E		May 1 - Oct. 30 Domestic, Stockwatering
15468 P 03/31/53		Frank J., Jr. & C. Sullivan	D-48N/6E-35R1	Unnamed Stream	NW	NE	35	48N	6E		Jan. 1 - May 31 Irrigation
15469 P 03/31/53		Frank J., Jr. & C. Sullivan	D-48N/6E-35R1	Unnamed Stream	NE	NE	35	48N	6E		Jan. 1 - May 30 Irrigation
15681 L 05/21/54		Robert E. Schildeoh	D-44N/1E-7C1	Antelope Creek	SE	SE	07	44N	1E		Apr. 1 - Aug. 1 Irrigation, Stockwatering
16346 P 04/27/55		Stanley Johnson	D-47N/7E-6R1	Unnamed Creek	SW	NW	06	47N	7E		Oct. 1 - May 15 Irrigation
19521 P 07/07/60		U. S. Klamath National Forest		Runaway Creek Spring	NW	NW	05	43N	2E		Apr. 1 - Dec. 1 Domestic, Stockwatering Fire protection
19523 P 07/07/60		U. S. Klamath National Forest		Unnamed Spring	SE	SW	15	43N	14		May 1 - Oct. 31 Domestic and other uses too numerous to list

^aP - Indicates permit number of application approved.

L - Indicates license number of right confirmed.

A - Neither permit nor license issued as of above date.

TABLE A-1 (Continued)
APPLICATIONS TO APPROPRIATE WATER IN
LOST RIVER - BUTTE VALLEY HYDROGRAPHIC UNIT
(Filed with State Water Rights Board as of January 20, 1965)

Application number and Status*	Date filed	Present owner	Diversion location number	Source	Location of point of diversion				Amount	Period of diversion	Purpose
					1/4	1/4	Sec	T			
19524 P	07/07/60	U. S. Klamath National Forest		Unnamed Stream	SW	NW	31	45N	2E	0.09	Stockwatering, Wildlife propagation
19525 P	07/07/60	U. S. Klamath National Forest		Baird Springs	NE	SW	15	43N	1E	1400 gpd	Domestic and uses too numerous to list.
19527 P	07/07/60	U. S. Klamath National Forest		Antelope Well Underflow	SE	SW	04	44N	2E	1200 gpd	Stockwatering
19807 P	10/10/60	James D. Ellis		Antelope Creek	NE	NE	18	44N	1E	1.5 cfs 20	Irrigation, Domestic, Stockwatering
20038 P	03/16/61	U. S. Bureau of Land Management		Unnamed Stream	SE	SW	19	46N	2E	2	Stockwatering, Wildlife propagation
				Unnamed Stream	SE	NE	24	46N	1E	4	Stockwatering, Wildlife propagation
				Unnamed Stream	SE	NW	25	46N	1E	3	Stockwatering, Wildlife propagation
				Unnamed Stream	SE	SW	30	46N	2E	2	Stockwatering, Wildlife propagation
				Unnamed Stream	SW	SW	27	46N	1E	3	Stockwatering, Wildlife propagation
				Unnamed Stream	SW	NE	32	46N	1E	3	Stockwatering, Wildlife propagation
				Unnamed Stream	NW	SE	33	46N	1E	3	Stockwatering, Wildlife propagation
20667 P	03/21/62	U. S. Shasta-Trinity Natl. Forests		Toad Well	SE	SE	08	41N	2E	400 gpd	Domestic, Fire protection
20670 P	03/21/62	U. S. Shasta-Trinity Natl. Forests		Delmap Spring	NE	SE	13	41N	1E	1300 gpd	Domestic and uses too numerous to list
20671 P	03/21/62	U. S. Shasta-Trinity Natl. Forests		Harris Spring	NE	NW	19	43N	2E	1400 gpd	Domestic, Stockwatering, Fire protection
20959 P	03/28/62	U. S. Klamath National Forest		Mudgrave Creek	NE	SW	18	46N	2W	0.75 cfs 347.8	Recreational, Fish culture
				Selkai Creek	NE	NE	19	46N	2W	0.44 cfs 347.8	Recreational, Fish culture
				3 Unnamed Springs	SE	NE	19	46N	2W	0.06 cfs 347.8	Recreational, Fish culture
				Unnamed Stream	NW	NW	20	46N	2W	0.06 cfs 347.8	Recreational, Fish culture
21527 A	11/08/63	Stanley Johnson		Unnamed Stream	NE	NW	16	46N	6E	2	Stockwatering, Recreational, Fire protection
21528 A	11/08/63	Stanley Johnson		Unnamed Stream	SW	NW	15	46N	6E	2	Stockwatering, Recreational, Fire protection
				Unnamed Stream	NE	SE	01	47N	6E	2	Stockwatering, Recreational, Fire protection

* P - Indicates permit number of application approved.

L - Indicates license number of right confirmed.

A - Neither permit nor license issued as of above date.

TABLE A-1 (Continued)
APPLICATIONS TO APPROPRIATE WATER IN
LOST RIVER - BUTTE VALLEY HYDROGRAPHIC UNIT
(Filed with State Water Rights Board as of January 20, 1965)

Application number and Status ^a	Date filed	Present owner	Division location number	Source	Location of point of diversion				Amount	Period of diversion	Purpose
					1/4	1/4	Sec.	T.			
21528 A	11/08/63	Stanley Johnson		Unnamed Stream	NE	NE	12	47N	68	1	Oct. 15- Apr. 15 Stockwatering, Rea-
				Unnamed Stream	SW	NE	07	47N	78	1	Stockwatering, Rea-
				Unnamed Stream	NW	SW	08	47N	68	3	tional, Fire protection
				Unnamed Stream	NE	SE	08	47N	68	0.5	Stockwatering, Rea-
				Unnamed Stream	NW	SW	09	47N	68	5	tional, Fire protection
				Unnamed Stream	SW	NE	09	47N	68	1	Stockwatering, Rea-
				Unnamed Stream	NW	SE	17	47N	68	0.5	tional, Fire protection
				Unnamed Stream	SW	SW	16	47N	68	1.5	tional, Fire protection
				Unnamed Stream	SE	SE	17	47N	68	3	Stockwatering, Rea-
				Unnamed Stream	NW	NE	17	47N	68	1	tional, Fire protection
				Unnamed Stream	NW	NW	17	47N	68	1	Stockwatering, Rea-
				Unnamed Stream	NE	NE	19	47N	68	0.5	tional, Fire protection
				Unnamed Stream	SW	SW	15	47N	68	1.5	Stockwatering, Rea-
				Unnamed Stream	NE	NW	15	47N	68	1	tional, Fire protection
				Unnamed Stream	NW	SE	08	47N	68	1	tional, Fire protection
21530 A	11/08/63	Johnson Stock Company		Unnamed Stream	NE	NW	16	47N	68	1.5	Stockwatering, Rea-
				Unnamed Stream	NE	NE	20	48N	68	4	tional, Fire protection
				Unnamed Stream	NE	NE	32	48N	68	2	Stockwatering, Rea-
				Unnamed Stream	SE	NW	32	48N	68	3	tional, Fire protection
				Unnamed Stream	NE	SE	05	47N	68	1	Stockwatering, Rea-
				Unnamed Stream	NE	SW	04	47N	68	3	tional, Fire protection
				Unnamed Stream	SW	SE	21	48N	68	0.5	Stockwatering, Rea-
				Unnamed Stream	NW	SW	21	48N	68	3	tional, Fire protection
				Unnamed Stream	NE	NW	28	48N	68	2.5	Stockwatering, Rea-
				Unnamed Stream	SE	SE	14	48N	68	6	tional, Fire protection
21531 A	11/08/63	Johnson Stock Company		Unnamed Stream	NE	NE	12	47N	68	1	Stockwatering, Rea-
				Unnamed Stream	SW	NE	07	47N	78	1	Stockwatering, Rea-
				Unnamed Stream	NW	SW	08	47N	68	3	tional, Fire protection
				Unnamed Stream	NE	SE	08	47N	68	0.5	Stockwatering, Rea-
				Unnamed Stream	NW	SW	09	47N	68	5	tional, Fire protection
				Unnamed Stream	SW	NE	09	47N	68	1	Stockwatering, Rea-
				Unnamed Stream	NW	SE	17	47N	68	0.5	tional, Fire protection
				Unnamed Stream	SW	SW	16	47N	68	1.5	tional, Fire protection
				Unnamed Stream	SE	SE	17	47N	68	3	Stockwatering, Rea-
				Unnamed Stream	NW	NE	17	47N	68	1	tional, Fire protection
				Unnamed Stream	NW	NW	17	47N	68	1	Stockwatering, Rea-
				Unnamed Stream	NE	NE	19	47N	68	0.5	tional, Fire protection
				Unnamed Stream	SW	SW	15	47N	68	1.5	Stockwatering, Rea-
				Unnamed Stream	NE	NW	15	47N	68	1	tional, Fire protection
				Unnamed Stream	NW	SE	08	47N	68	1	tional, Fire protection

^a - Indicates permit number of application approved.

L - Indicates license number of right confirmed.

A - Rather permit nor license issued as of above date.

TABLE A-1 (Continued)
APPLICATIONS TO APPROPRIATE WATER IN
LOST RIVER - BUTTE VALLEY HYDROGRAPHIC UNIT
(Filed with State Water Rights Board as of January 20, 1965)

Application number and Status*	Date filed	Present owner	Diversion location number	Source	Location of point of diversion				Amount	Period of diversion	Purpose	
					1/4	1/4	Sec	T				R
21532 A	11/08/63	Johnson Steak Company		Unnamed Stream	NE	SE	33	47N	6E	1.5	Oct. 15- Apr. 15	Stockwatering, Recrea- tional, Fire protection
				Unnamed Stream	SW	NE	33	47N	6E	3	Oct. 15- Apr. 15	Stockwatering, Recrea- tional, Fire protection
				Unnamed Stream	NW	NW	04	46N	6E	2.5	Oct. 15- Apr. 15	Stockwatering, Recrea- tional, Fire protection
				Unnamed Stream	SW	NE	28	47N	6E	0.7	Oct. 15- Apr. 15	Stockwatering, Recrea- tional, Fire protection
				Unnamed Stream	SE	SW	03	46N	6E	2	Oct. 15- Apr. 15	Stockwatering, Recrea- tional, Fire protection
21533 A	11/08/63	Johnson Steak Company		Unnamed Stream	NE	NE	03	47N	7E	2	Oct. 15- Apr. 15	Stockwatering, Recrea- tional, Fire protection
21534 A	11/08/63	Johnson Steak Company		Unnamed Stream	SE	SE	09	46N	6E	0.5	Oct. 15- Apr. 15	Stockwatering, Recrea- tional, Fire protection
21535 A	11/08/63	Johnson Steak Company		Unnamed Stream	NE	SE	21	47N	6E	2	Oct. 15- Apr. 15	Stockwatering, Recrea- tional, Fire protection
				Unnamed Stream	SE	SW	05	47N	6E	1	Oct. 15- Apr. 15	Stockwatering, Recrea- tional, Fire protection
21820 A	06/18/64	Michael H. & Mary L. Payne		Unnamed Stream	NW	SE	03	46N	6E	1	All Year	Stockwatering, Fire Protection

ap - Indicatee permit number of application approved.

L - Indicatee license number of right confirmed.

A - Neither permit nor license issued as of above date.

APPENDIX B

LAND AND WATER USE IN MODOC NATIONAL FOREST

APPENDIX B

LAND AND WATER USE IN MODOC NATIONAL FOREST

The land and water use practices on the portion of the hydrographic unit lying within the limits of the Modoc National Forest are sufficiently unique to warrant special mention. A large section of this area is known as the "Devil's Garden" because of its rocky, semibarren nature. The principal use of most of this area is not timber production, but livestock range. This is due to the fact that the timber native to this region consists largely of a sparse or scattered stand of juniper of negligible commercial value.

Briefly, the pattern of land and water use in this area consists of building dams on intermittent streams and pasturing livestock on the surrounding natural forage. In the natural state, water for livestock is so scarce in this area during the dry summer season that relatively few stock can be kept on the range. By storing water during the winter and spring, it is made available throughout the year. Many reservoirs have been built within this area, some quite small and called "stock ponds", others somewhat larger, and some covering hundreds of acres.

Several such reservoirs have been built on the private lands within the area in addition to those on the National Forest itself. Some of the better reservoir sites and lands around them have been privately owned for many years. Some of these "island" areas are the headquarters of large ranch operations.

Within the Modoc National Forest most of the Devil's Garden District and much of the Double Head District to the west are similar and are administered mainly for range purposes. These districts are divided into a number of "allotments" which are leased to one or more ranchers called "permittees". A permit is issued annually, on a bid basis, for the use of each "allotment". The permits specify the kind and number of stock, the payment per head, period of use, etc. Maintenance of the water developments within the allotments is the responsibility of the respective permittees. A list of the allotments on the National Forest land is given in Table B-1 with certain data about each. Plate 3 shows the areas covered by the various allotments.

In addition to providing stockwater during the dry season, many of these reservoirs, especially the larger ones, also serve to increase the available forage. Within the reservoir areas, in and near the edge of the water, a lush growth of native water-suited plants is often produced. These plants, though not the best of pasture, do appreciably augment the natural forage in this region. As the warm dry season progresses, the water recedes, and the belt of water plants moves down with it. The reservoirs in this area are mostly shallow due to the flat terrain and, over a season, several hundred acres may be so affected. This type of pasture is included in the term "induced high water table native pasture" in Table 6, "Irrigated Lands, 1959". Some 7,500 acres of this type of pasture are located in the Boles and Clear Lake Subunits.

TABLE B-1

RANGE ALLOTMENTS IN MODOC NATIONAL FOREST
(1959)

Allotment	: Location :		: Stock pastured :		Permittees
	: (center) :		: :		
	: Town-: :		: Cattle : Sheep :		
	: ship : Range: and horses: and goats: :		: :		
Barn Top	T47N	R3E		1,250	D. O'Keefe
Beaver Dam	T48N	R11E		3,000	LaFranchi
Big Sage*	T44N	R10E	831		---
Blue Mountain	T47N	R10E	500		Bidart Brothers
Boles	T46N	R9E	1,100		---
Boles Spring	T45N	R8E		1,000	R. Anchordoguy
Brown's Well	T44N	R8E		1,000	R. Anchordoguy
Casuse	T45N	R5E		1,100	D. O'Keefe
Clear Lake	T47N	R7E	400		Stanley Johnson
Coyote Butte	T46N	R6E		1,100	D. O'Keefe
Creums Lake	T46N	R3E		1,250	J. Singleton
Deep Lake	T46N	R3E		1,250	D. O'Keefe
Double Head	T45N	R7E		1,250	O'Connor Livestock Co.
Dry Creek	T48N	R12E	150		Point Ranch
Dry Lake	T44N	R6E	300		W. C. Dalton
East Grizzlie	T47N	R12E	400		---
Fleener	T46N	R3E		300	P. Lynch
Glass Mountain	T44N	R5E		1,150	O'Connor Livestock Co.
Hackamore	T43N	R7E		1,000	S. Beeson
Happy Camp	T42N	R8E	724		---
Homestead	T45N	R7E		1,250	O'Connor Livestock Co.
Howard's Gulch*	T43N	R9E	466		---

TABLE B-1 (Cont'd.)

Allotment	: Location :		: Stock pastured :		Permittees
	: (center) :		: :		
	: Town-: :		: Cattle : Sheep :		
	: ship : Range: and horses :		: and goats:		
Lava Beds	Tl46N	R5E		1,250	O'Connor Livestock Co
Lost River	Tl48N	R8E	350		Stanley Johnson
Mammoth Springs	Tl47N	R8E		1,000	J. Singleton
Mount Dome	Tl45N	R3E	100		R. C. Laird
Mowitz	Tl44N	R8E		900	R. Anchordoguy
Mud Lake*	Tl43N	R6E	220		N. Quigley
Nigger Bend	Tl46N	R8E		1,000	O'Connor Livestock Co
North Springs	Tl43N	R8E		1,000	J. Espil
Pine Springs	Tl45N	R12E	500		Jessup
Pinnacle Lake	Tl45N	R8E		900	O'Connor Livestock Co
Potter's Pasture	Tl44N	R7E	500		B. Stevens
Quaking Aspen*	Tl43N	R5E		1,250	O'Connor Livestock Co
Rimrock	Tl45N	R7E		1,000	O'Connor Livestock Co
Sardine Flat	Tl47N	R3E		1,250	O'Connor Livestock Co
Surveyor's Valley	Tl45N	R9E	300		A. Pillissa
Timber Mountain	Tl44N	R6E		1,000	O'Connor Livestock Co
Timbered Mountain	Tl46N	R11E	1,135		G. B. Dorris
Tucker	Tl46N	R6E	715		W. C. Dalton
Warm Springs	Tl48N	R9E	200		Neva Grohs and Sons
West Grizzlie	Tl47N	R12E	220		J. Rice
Whitney Butte	Tl45N	R3E		1,250	P. Lynch

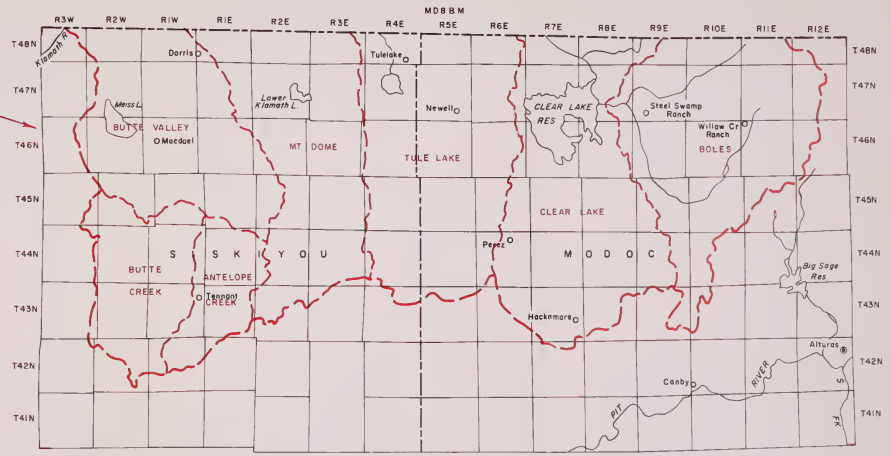
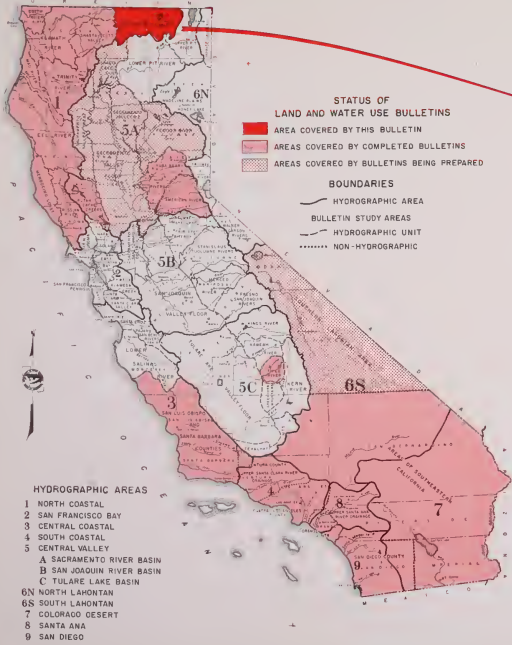
* Partially outside Lost River-Butte Valley Hydrographic Unit.

Bulletin

94-
94-
94-
94-
94-
94-
94-
94-
94-
94-
94-
94-
94-
94-
94-
94-
94-
94-

Bulletin

70
71
101
102
103
24-50
121
122



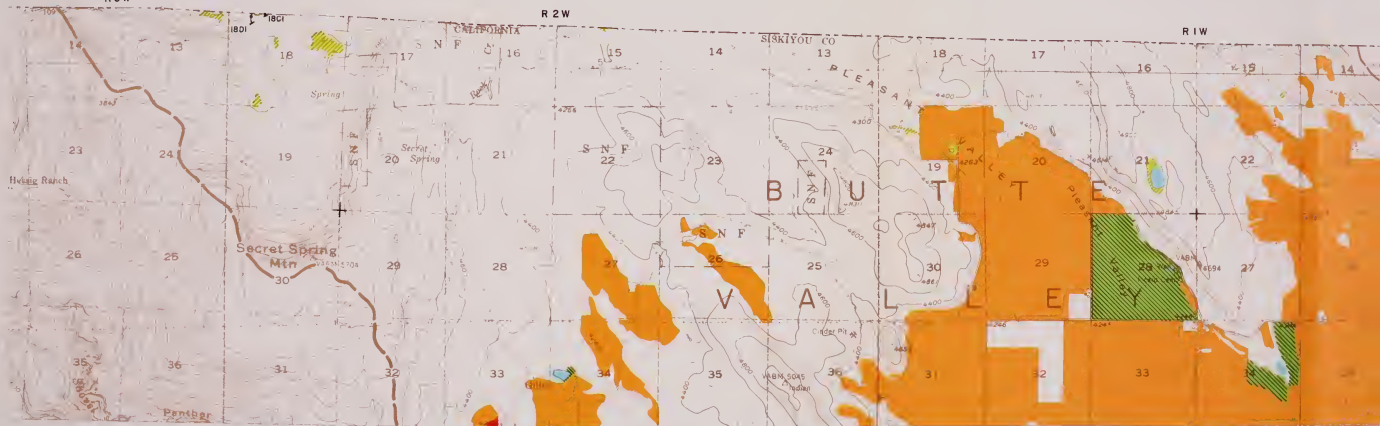
STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
NORTHERN BRANCH
LAND AND WATER USE
LOST RIVER-BUTTE VALLEY HYDROGRAPHIC UNIT
AREA OF INVESTIGATION
1965

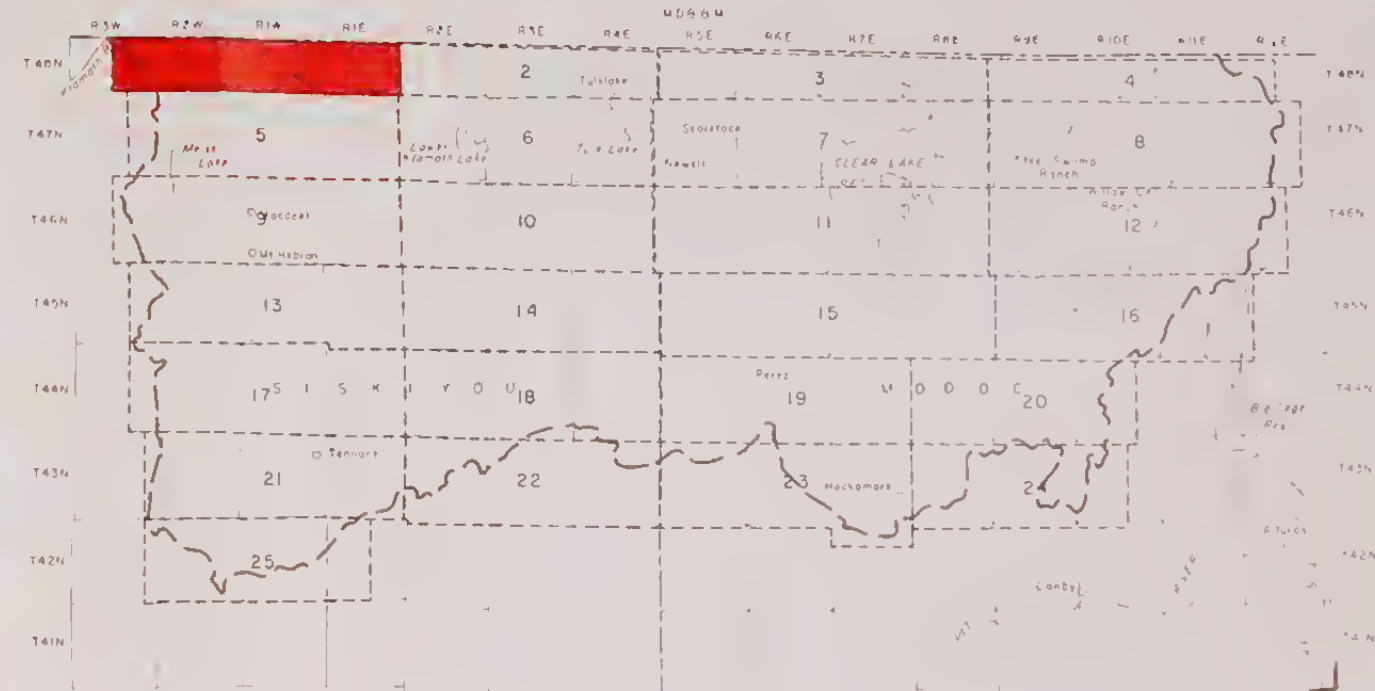
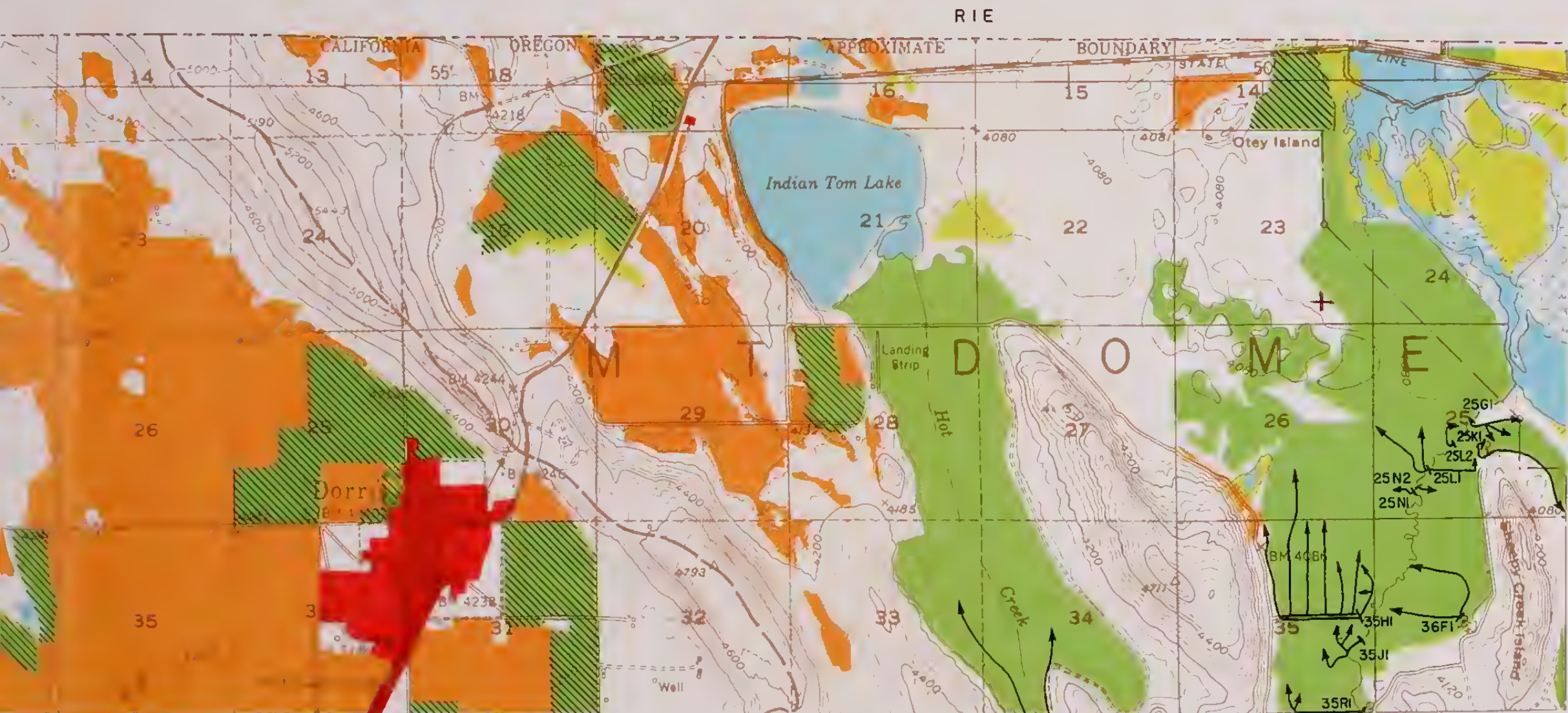
R 3 W

R 2 W

R 1 W

T 48 N





INDEX TO SHEETS

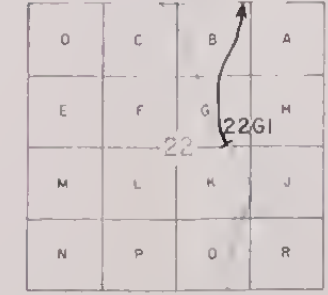


- GRAVITY DIVERSION
- PUMP DIVERSION
- DIVERSION CANAL OR DITCH
- NATURAL CHANNEL USED AS DITCH
- DIVERSION PIPE
- STREAM GAGING STATION
- HYDROGRAPHIC UNIT BOUNDARY
- SUBUNIT BOUNDARY

LEGEND

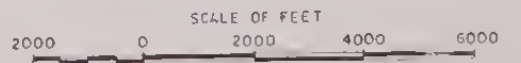
- LANDS RECEIVING FULL IRRIGATION
- LANDS RECEIVING PARTIAL IRRIGATION
- LANDS USUALLY IRRIGATED BUT IDLE OR FALLOW IN 1959
- LANDS IRRIGATED BY GROUND WATER
- LANDS IRRIGATED BY SURFACE AND GROUND WATER
- MEADOWLANDS
- MARSH LANDS
- DRY-FARMLANDS
- URBAN LANDS
- RECREATIONAL LANDS
- POTENTIAL RECREATIONAL LANDS

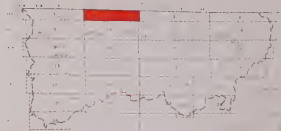
KEY TO NUMBERING SYSTEM



DIVERSIONS SHOWN ARE NUMBERED BY TOWNSHIP, RANGE AND SUBDIVISION OF SECTION, e.g. D-43N/2W-22GI

STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
NORTHERN BRANCH
LAND AND WATER USE
LOST RIVER BUTTE VALLEY
HYDROGRAPHIC UNIT
LAND AND WATER USE
AND
CLASSIFICATION OF RECREATIONAL LANDS
T 48 N, R 3 W-1E, MDB&M
1959




























INDEX SUBJECTS



1. **Introduction**
 2. **Background**
 3. **Methodology**
 4. **Results**
 5. **Discussion**
 6. **Conclusion**
 7. **References**
 8. **Appendix**
 9. **Index**
 10. **Summary**

LEGEND

- | | |
|---|---------------------------------|
|  | 0001 00 00 00 00 00 00 00 00 00 |
|  | 0000 00 00 00 00 00 00 00 00 00 |
|  | 0001 00 00 00 00 00 00 00 00 00 |
|  | 0001 00 00 00 00 00 00 00 00 00 |
|  | 0001 00 00 00 00 00 00 00 00 00 |
|  | 0001 00 00 00 00 00 00 00 00 00 |
|  | 0001 00 00 00 00 00 00 00 00 00 |
|  | 0001 00 00 00 00 00 00 00 00 00 |
|  | 0001 00 00 00 00 00 00 00 00 00 |
|  | 0001 00 00 00 00 00 00 00 00 00 |
|  | 0001 00 00 00 00 00 00 00 00 00 |
|  | 0001 00 00 00 00 00 00 00 00 00 |
|  | 0001 00 00 00 00 00 00 00 00 00 |
|  | 0001 00 00 00 00 00 00 00 00 00 |
|  | 0001 00 00 00 00 00 00 00 00 00 |
|  | 0001 00 00 00 00 00 00 00 00 00 |
|  | 0001 00 00 00 00 00 00 00 00 00 |
|  | 0001 00 00 00 00 00 00 00 00 00 |
|  | 0001 00 00 00 00 00 00 00 00 00 |
|  | 0001 00 00 00 00 00 00 00 00 00 |
|  | 0001 00 00 00 00 00 00 00 00 00 |
|  | 0001 00 00 00 00 00 00 00 00 00 |
|  | 0001 00 00 00 00 00 00 00 00 00 |

KEY TO NUMBERING SYSTEM

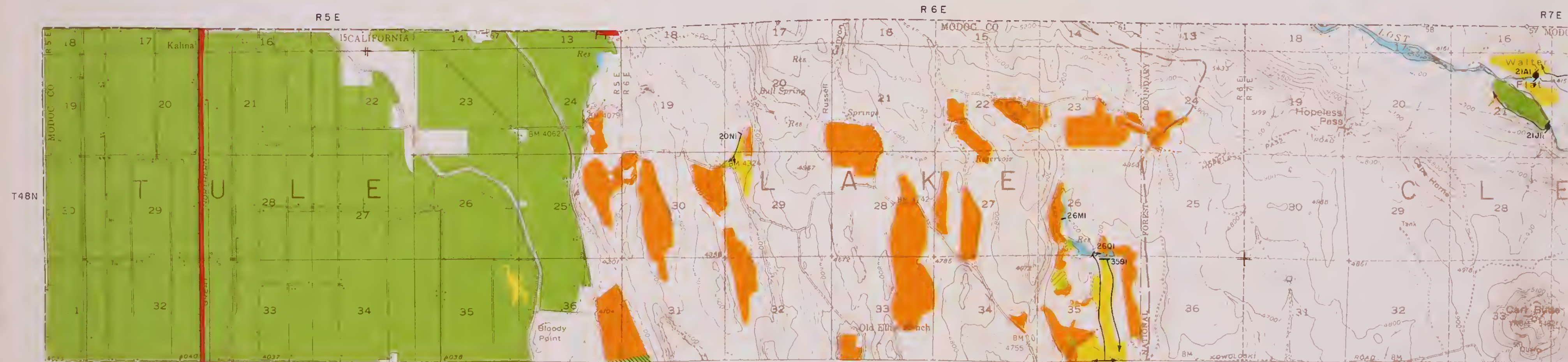


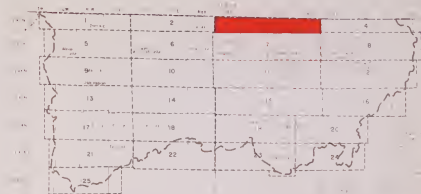
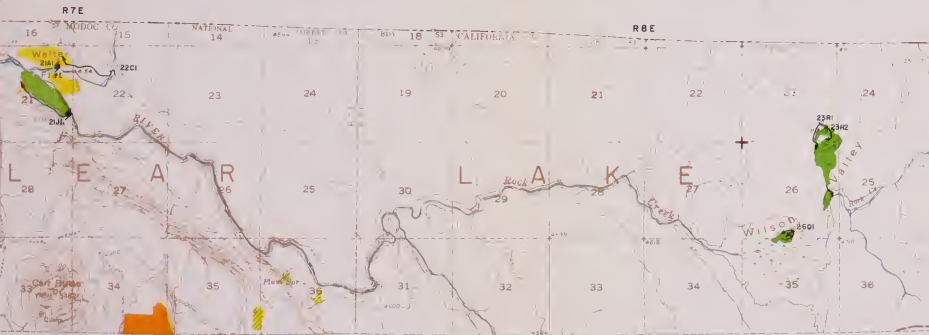
1991年12月15日，在北京市召开了“中国城市人口与住房问题研讨会”。会议认为，中国城市人口与住房问题，是一个关系到国家前途和民族命运的重大问题。会议提出，要解决中国城市人口与住房问题，必须坚持“以人为本、因地制宜、量力而行、循序渐进”的原则。会议还提出，要采取“政府主导、社会参与、市场运作”的模式，来推进中国城市人口与住房问题的解决。会议最后，还提出，要进一步加强城市人口与住房问题的研究，为政府决策提供科学依据。

THE RESOURCE AGENCY OF LULUANA
DEPARTMENT OF WATER RESOURCES
NORTHERN BRANCH

LAND AND WATER USE
LOST RIVER BUTTE VALLEY
HYDROGRAPHIC UNIT
—
LAND AND WATER USE
AND
CLASSIFICATION OF RECREATIONAL LANDS
T 48 N, R2 - 4E, N08&M
1959







INDEX TO SHEETS



- GRAVITY DIVERSION
- PUMP DIVERSION
- DIVERSION CANAL OR DITCH
- NATURAL CHANNEL USED AS DITCH
- DIVERSION PIPE
- STREAM GAGING STATION
- HYDROGRAPHIC UNIT BOUNDARY
- SUBUNIT BOUNDARY

LEGEND

- LAND RECEIVING FULL IRRIGATION
- LANDS RECEIVING PARTIAL IRRIGATION
- LANDS USUALLY IN STEEP BUT IDLE OR PAUSE IN USE
- LANDS IRRIGATED BY SPRINKLER WATER
- LANDS IRRIGATED BY SURFACE AND SPRINKLER WATER
- MEADOWLANDS
- MARSH LANDS
- DRIFT-FARM LAND
- JUNCO LANDS
- RECREATIONAL LANDS
- POTENTIAL RECREATIONAL LANDS

KEY TO NUMBERING SYSTEM



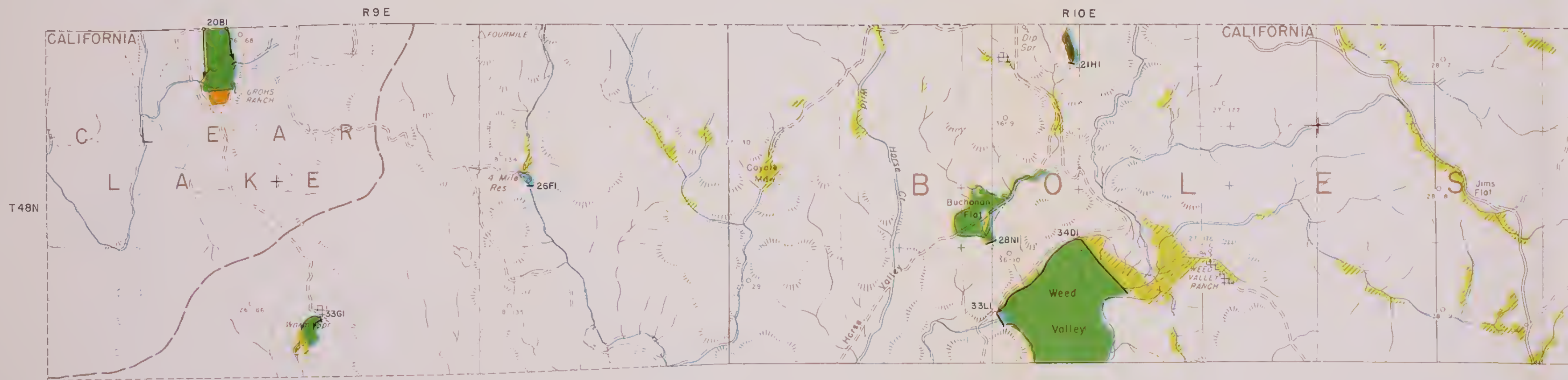
DIVERSIONS SHOWN ARE NUMBERED BY
TOWNSHIP, RANGE AND SUBDIVISION OF
SECTION, e.g. D-43N/2W-2201

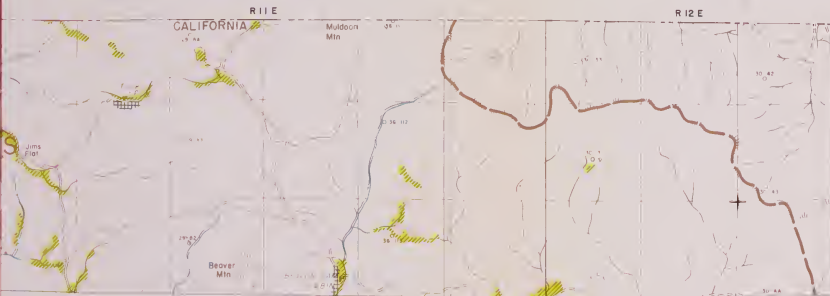
STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES

LAND AND WATER USE
LOST RIVER BUTTE VALLEY
HYDROGRAPHIC UNIT

LAND AND WATER USE
AND
CLASSIFICATION OF RECREATIONAL LANDS
T 48 N, R 5 -8 E, MDB 8 M
1959

SCALE OF FEET
2000 0 2000 4000 6000





INDEX TO SHEETS



- GRAVITY DIVERSION
- PUMP DIVERSION
- DIVERSION CANAL OR DITCH
- NATURAL CHANNEL USED AS DITCH
- DIVERSION PIPE
- STREAM GAGING STATION
- HYDROGRAPHIC UNIT BOUNDARY
- SURVEY BOUNDARY

LEGEND

- LAND RECEIVING FULL IRRIGATION
- LAND RECEIVING PARTIAL IRRIGATION
- LAND FULLY IRRIGATED BUT IDLE OR FALLOW IN 1959
- LANDS IRRIGATED BY GROUND WATER
- LANDS IRRIGATED BY SURFACE AND GROUND WATER
- MEADOWLANDS
- MARSH LANDS
- UN-TAMED LANDS
- WETLANDS
- RECREATION N.E. AREA
- POTENTIAL RECREATIONAL LANDS

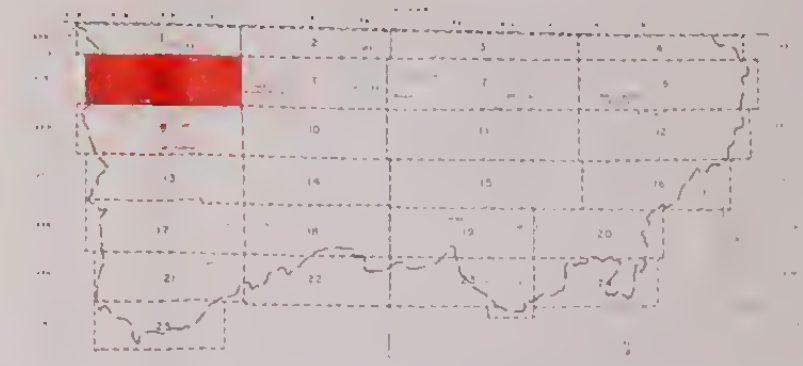
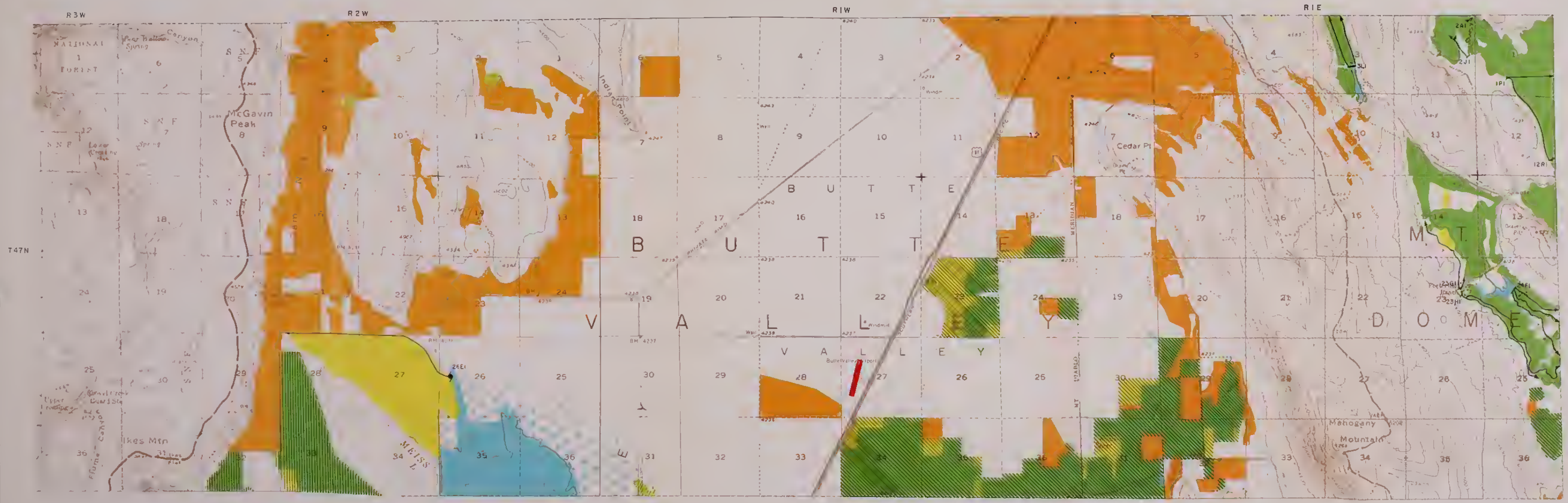
KEY TO NUMBERING SYSTEM



DIVERSIONS SHOWN ARE NUMBERED BY
TOWNSHIP RANGE AND SUBDIVISION OF
SECTION, e.g. 0-42N/12W-2201

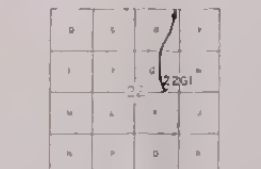
STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
NORTHERN BRANCH
LAND AND WATER USE
LOST RIVER BUTTE VALLEY
HYDROGRAPHIC UNIT
LAND AND WATER USE
AND
CLASSIFICATION OF RECREATIONAL LANDS
T 48 N, R 9-12E, MDB 8M
1959

SCALE OF FEET
0 100 200 300 400 500 600 700 800 900 1000



- LEGEND
- LAND RECEIVING FULL IRRIGATION
 - LANDS RECEIVING PARTIAL IRRIGATION
 - LANDS IRRIGATED BUT IDE OF FALLS IN 1959
 - LANDS IRRIGATED BY FLOW WATER
 - LANDS IRRIGATED BY DITCHES AND SPRING WATER
 - WETLANDS
 - WATER LAKE
 - UNDEVELOPED LANDS
 - UNDEVELOPED LANDS
 - POTENTIAL RECREATIONAL LANDS
- CREWTS DIVISION
PUMP DIVISION
DIVISION CANAL OR DITCH
NATURAL CHANNEL AND AS DITCH
DIVISION PIPE
STREAM CROSS SECTION
HYDROGRAPHIC UNIT BOUNDARY
BUTTE BOUNDARY

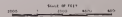
KEY TO NUMBERING SYSTEM



DIVISIONS SHOWN ARE NUMBERED BY TOWNSHIP, RANGE AND SUBDIVISION OF SECTION 24 OF 1876-1881

STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
NORTHERN BRANCH
LAND AND WATER USE
LOST RIVER BUTTE VALLEY
HYDROGRAPHIC UNIT
LAND AND WATER USE
AND
CLASSIFICATION OF RECREATIONAL LANDS
T 47 N, R 3 W-1 E, M 08 B M
1959

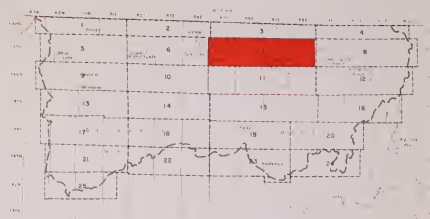
SCALE OF FEET
0 1000 2000 3000 4000 5000





R7E

R8E



INDEX TO SHEETS

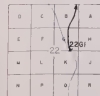


- GRAVITY DIVERSION
- PUMP DIVERSION
- DIVERSION CANAL OR DITCH
- NATURAL CHANNEL USED AS DITCH
- DIVERSION PIPE
- STREAM GAGING STATION
- HYDROGRAPHIC UNIT BOUNDARY
- SUBUNIT BOUNDARY

LEGEND

- LANDS RECEIVING FULL IRRIGATION
- LANDS RECEIVING PARTIAL IRRIGATION
- LANDS USUALLY IRRIGATED BUT SOLE OR FALLOW IN 1959
- LANDS IRRIGATED BY GROUND WATER
- LANDS IRRIGATED BY SURFACE AND GROUND WATER
- MEADOWLANDS
- MARSH LANDS
- DRY-FARMLANDS
- URBAN LANDS
- RECREATIONAL LANDS
- POTENTIAL RECREATIONAL LANDS

KEY TO NUMBERING SYSTEM



DIVERSIONS SHOWN ARE NUMBERED BY TOWNSHIP, RANGE AND SUBDIVISION OF SECTION, AS D-43N/24W-2201

STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
NORTHERN BRANCH

LAND AND WATER USE
LOST RIVER BUTTE VALLEY
HYDROGRAPHIC UNIT

LAND AND WATER USE
AND

CLASSIFICATION OF RECREATIONAL LANDS
T 47 N, R5-8E, MOB8M
1959

SCALE OF FEET
0 2000 4000 6000

R 9 E

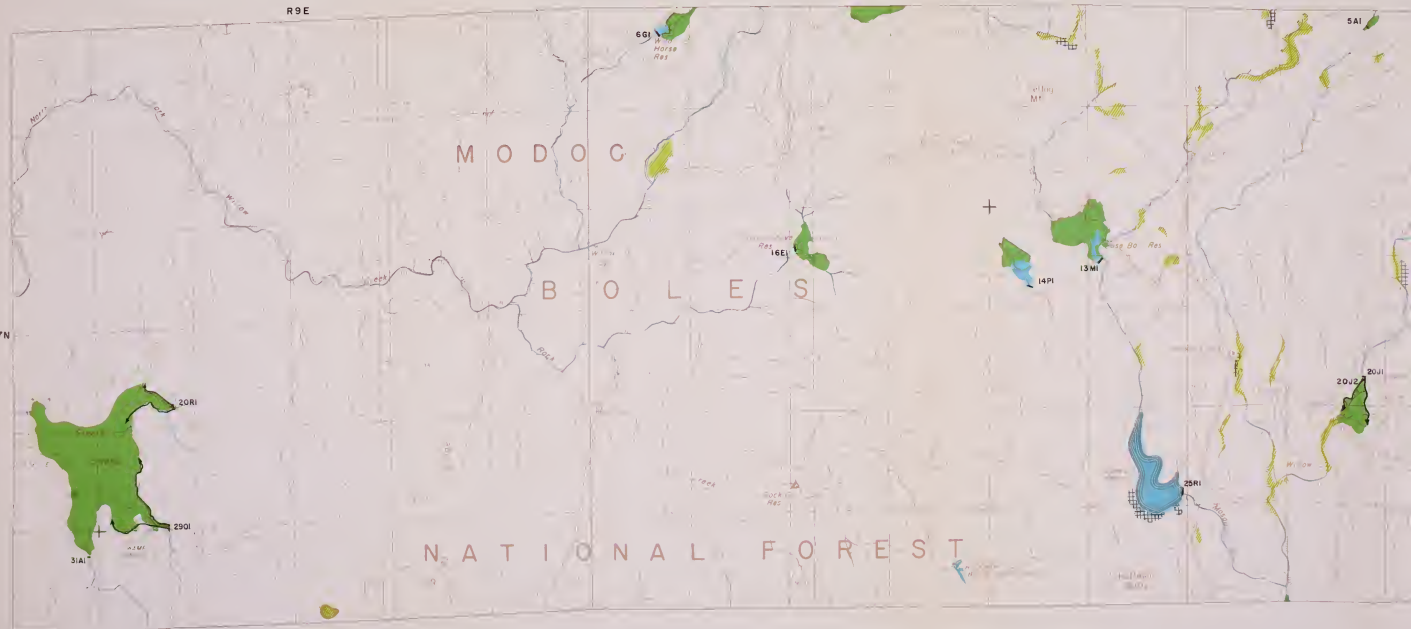
R 10 E

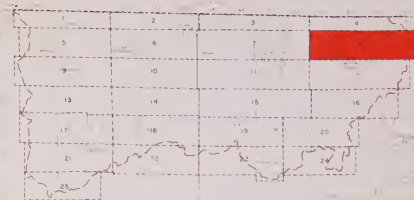
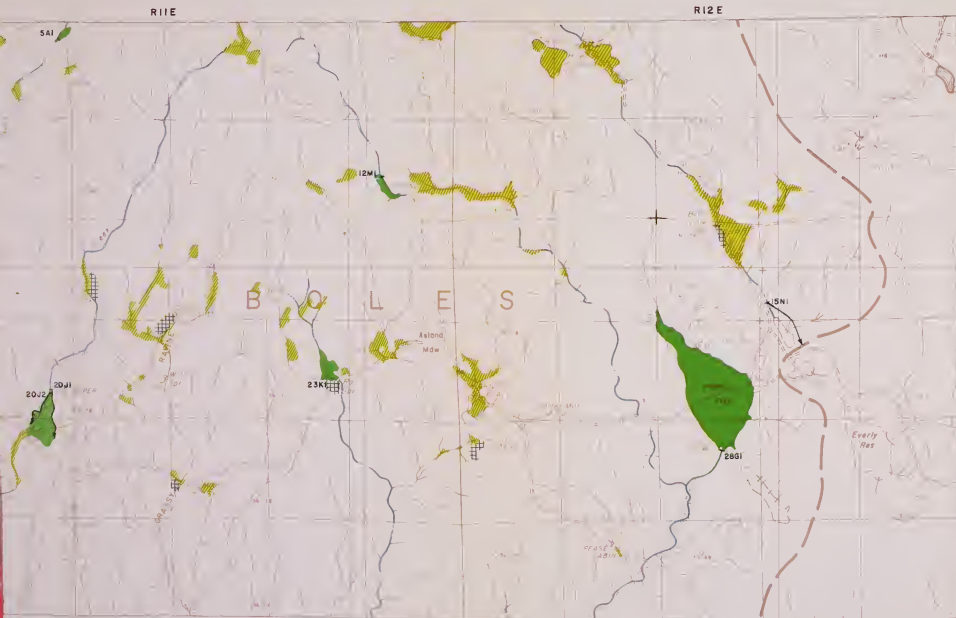
M O D O C

B O L E S

N A T I O N A L F O R E S T

T 47 N





INDEX TO SHEETS



- GRAVITY DIVERSION
- PUMP DIVERSION
- DIVERSION CANAL OR DITCH
- NATURAL CHANNEL USED AS DITCH
- DIVERSION PIPE
- STREAM GAGING STATION
- HYDROGRAPHIC UNIT BOUNDARY
- SUBMITT BOUNDARY

LEGEND

- LANDS RECEIVING FLOOD IRRIGATION
- LANDS RECEIVING PARTIAL IRRIGATION
- LANDS USUALLY IRRIGATED BUT IDLE OR FALLOW 1-1959
- LANDS IRRIGATED BY GROUND WATER
- LANDS IRRIGATED BY SURFACE AND GROUND WATER
- MEADOWLANDS
- WATERS LANDS
- OR TAMED LANDS
- URBAN LANDS
- RECREATIONAL LANDS
- POTENTIAL RECREATIONAL LANDS

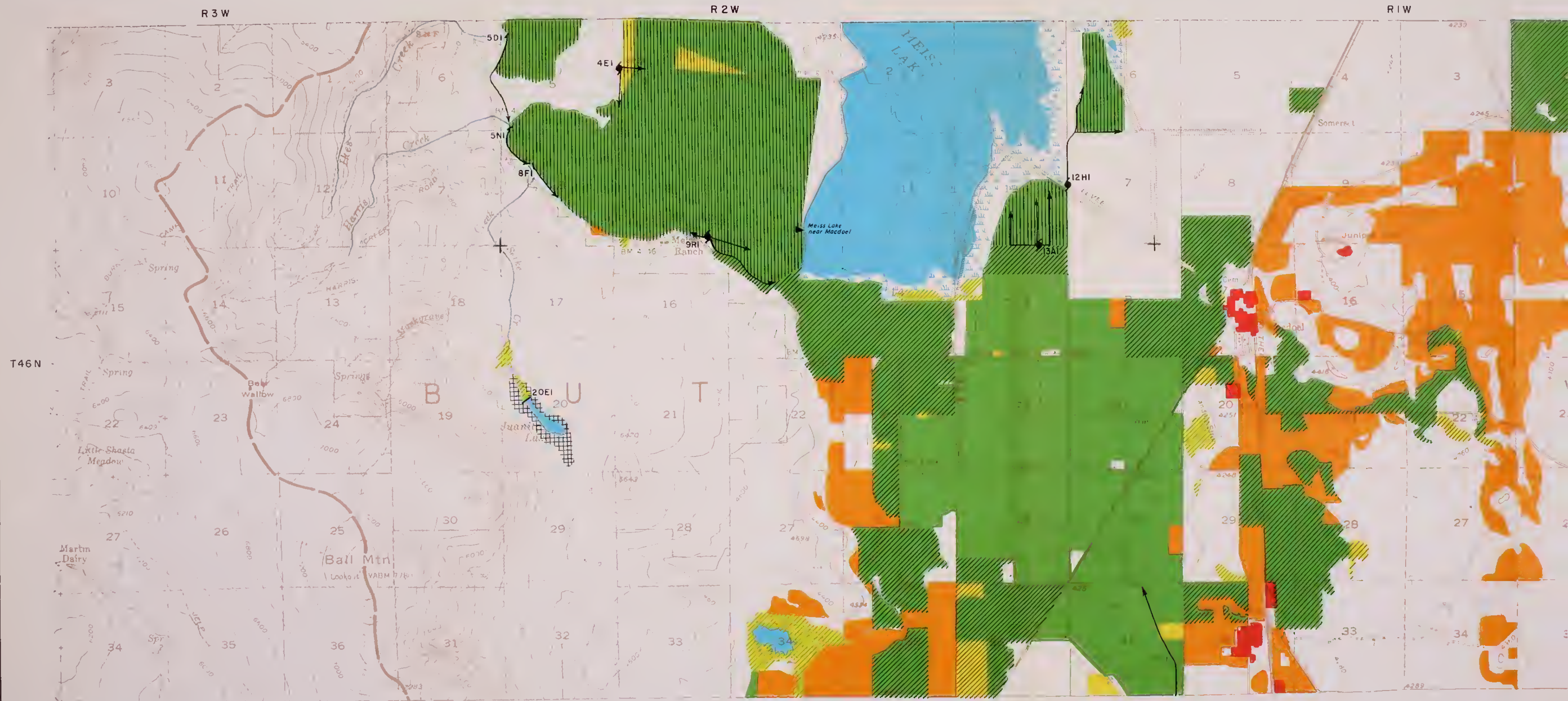
KEY TO NUMBERING SYSTEM



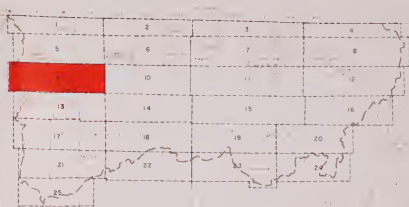
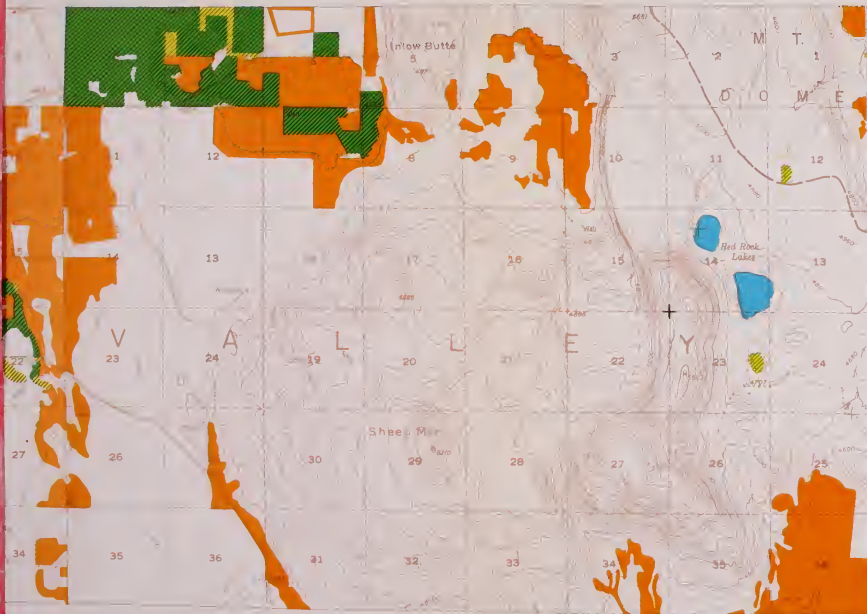
DIVERSIONS SHOWN ARE NUMBERED BY TOWNSHIP RANGE AND SUBDIVISION OF SECTION, e.g. D-14N-27E-2201

STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
NORTHERN BRANCH
LAND AND WATER USE
LOST RIVER BUTTE VALLEY
HYDROGRAPHIC UNIT
LAND AND WATER USE
AND
CLASSIFICATION OF RECREATIONAL LANDS
T. 47 N., R. 9-12 E., MD 8 & M
1959

SCALE OF FEET
0 2000 4000 6000



RIE



INDEX TO SHEETS

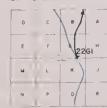


- GRAVITY DIVERSION
- PUMP DIVERSION
- DIVERSION CANAL OR DITCH
- NATURAL CHANNEL USED AS DITCH
- DIVERSION PIPE
- STREAM GAUGING STATION
- HYDROGRAPHIC UNIT BOUNDARY
- SUBUNIT BOUNDARY

LEGEND

- LANDS RECEIVING FULL IRRIGATION
- LANDS RECEIVING PARTIAL IRRIGATION
- LANDS USUALLY IRRIGATED BUT FALLOW IN 1959
- LANDS IRRIGATED BY GROUND WATER
- LANDS IRRIGATED BY SURFACE AND GROUND WATER
- MEADOWLANDS
- MARSH LANDS
- DRY-FARMED LANDS
- URBAN LANDS
- RECREATIONAL LANDS
- POTENTIAL RECREATIONAL LANDS

KEY TO NUMBERING SYSTEM

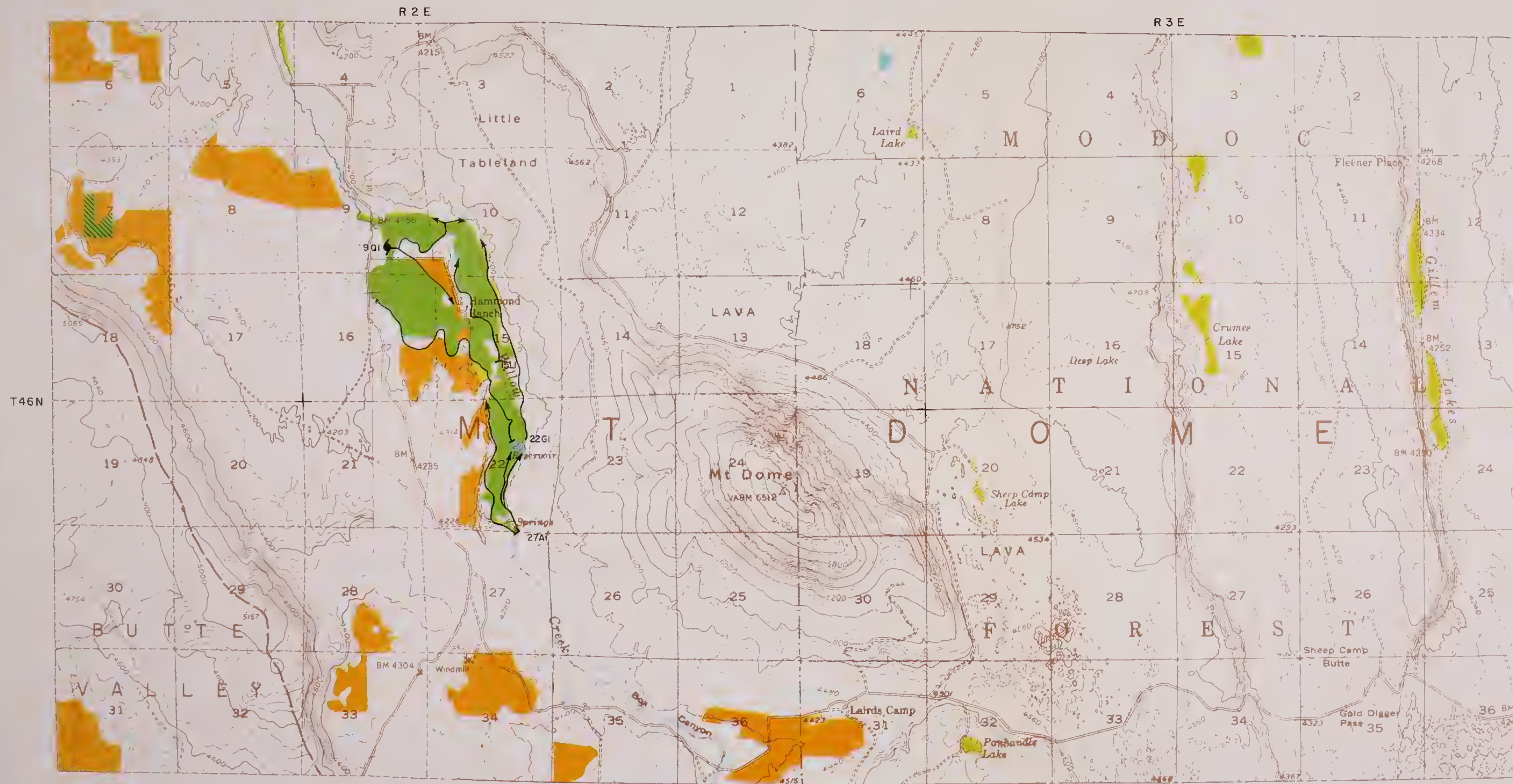


DIVERSIONS SHOWN ARE NUMBERED BY TOWNSHIP, RANGE AND SUBDIVISION OF SECTION, R 4 S 3 W 22 N

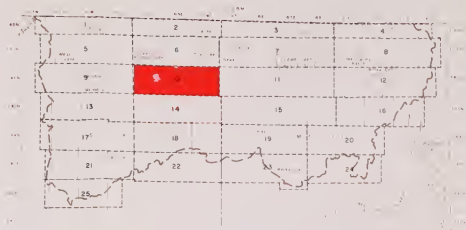
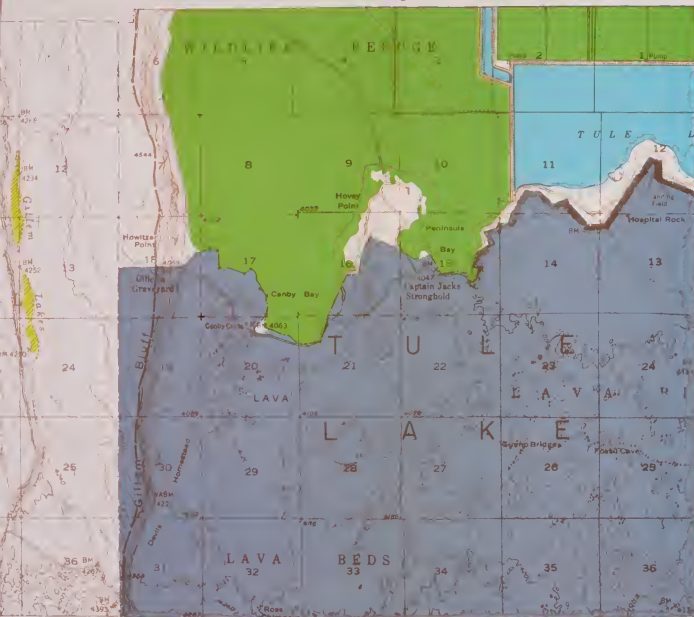
STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES

NORTHERN BRANCH
LAND AND WATER USE
LOST RIVER BUTTE VALLEY
HYDROGRAPHIC UNIT
LAND AND WATER USE
AND
CLASSIFICATION OF RECREATIONAL LANDS
T 46 N, R 3 W-1E, MOB & M
1959

SCALE OF FEET
2000 0 2000 4000 6000



R 4 E



INDEX TO SHEETS



- GRAVITY DIVERSION
- PUMP DIVERSION
- DIVERSION CANAL OR DITCH
- NATURAL CHANNEL USED AS DITCH
- DIVERSION PIPE
- STREAM GAGING STATION
- HYDROGRAPHIC UNIT BOUNDARY
- SUBURB BOUNDARY

LEGEND

- LANDS RECEIVING FULL IRRIGATION
- LANDS RECEIVING PARTIAL IRRIGATION
- LANDS USUALLY IRRIGATED BUT SOLE ON FALLOW IN 1959
- LANDS IRRIGATED BY GROUND WATER
- LANDS IRRIGATED BY SURFACE AND GROUND WATER
- MEADOWLANDS
- MARSH LANDS
- DRY-FARMED LANDS
- URBAN LANDS
- RECREATIONAL LANDS
- POTENTIAL RECREATIONAL LANDS

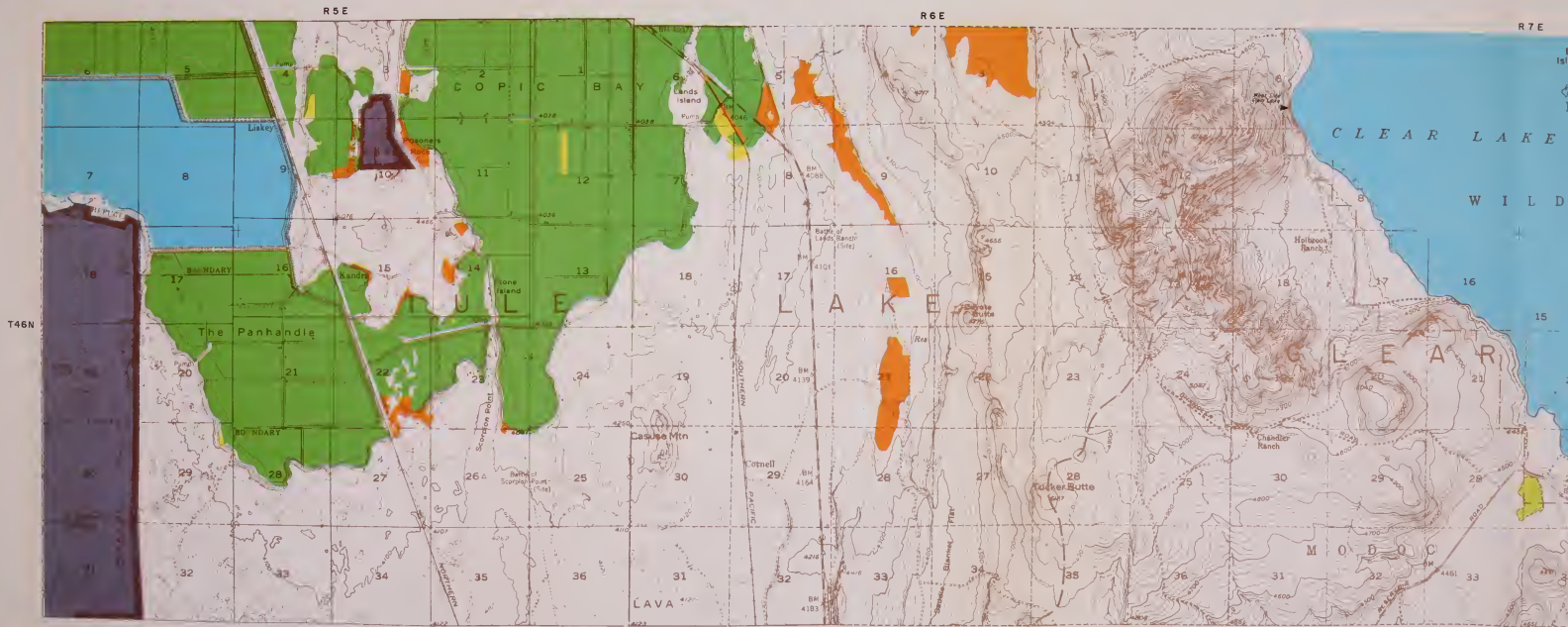
KEY TO NUMBERING SYSTEM

D	C	B	A
E	F	G	H
M	L	K	J
N	P	O	R

DIVERSIONS SHOWN ARE NUMBERED BY
TOWNSHIP, RANGE AND SUBDIVISION OF
SECTION, & B. D. 434/FW-2201

SCALE OF FEET
0 2000 4000 6000

STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
NORTHERN BRANCH
LAND AND WATER USE
LOST RIVER BUTTE VALLEY
HYDROGRAPHIC UNIT
LAND AND WATER USE
AND
CLASSIFICATION OF RECREATIONAL LANDS
T 46 N, R 2-4E, M 08B M
1959





INDEX TO SHEETS



GRAVITY DIVERSION

PUMP DIVERSION

DIVERSION CANAL OR DITCH












NATURAL CHANNEL USED AS DITCH

DIVERSION PIPE

STREAM GAGING STATION

HYDROGRAPHIC UNIT BOUNDARY

SUBUNIT BOUNDARY

-  LANDS RECEIVING FULL IRRIGATION
-  LANDS RECEIVING PARTIAL IRRIGATION
-  LANDS USUALLY IRRIGATED BUT DUE OR FALLOW IN 1959
-  LANDS IRRIGATED BY GROUND WATER
-  LANDS IRRIGATED BY SURFACE AND GROUND WATER
-  WADLOWLANDS
-  MARSH LANDS
-  DRY-FARMED LANDS
-  URBAN LANDS
-  RECREATIONAL LANDS
-  POTENTIAL RECREATIONAL LANDS

DIVERSIONS SHOWN ARE NUMBERED BY
TOWNSHIP, RANGE AND SUBDIVISION OF
SECTION, e.g. 0-43N/2W-226I

STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
NORTHERN BRANCH

LAND AND WATER USE
LOST RIVER BUTTE VALLEY
HYDROGRAPHIC UNIT

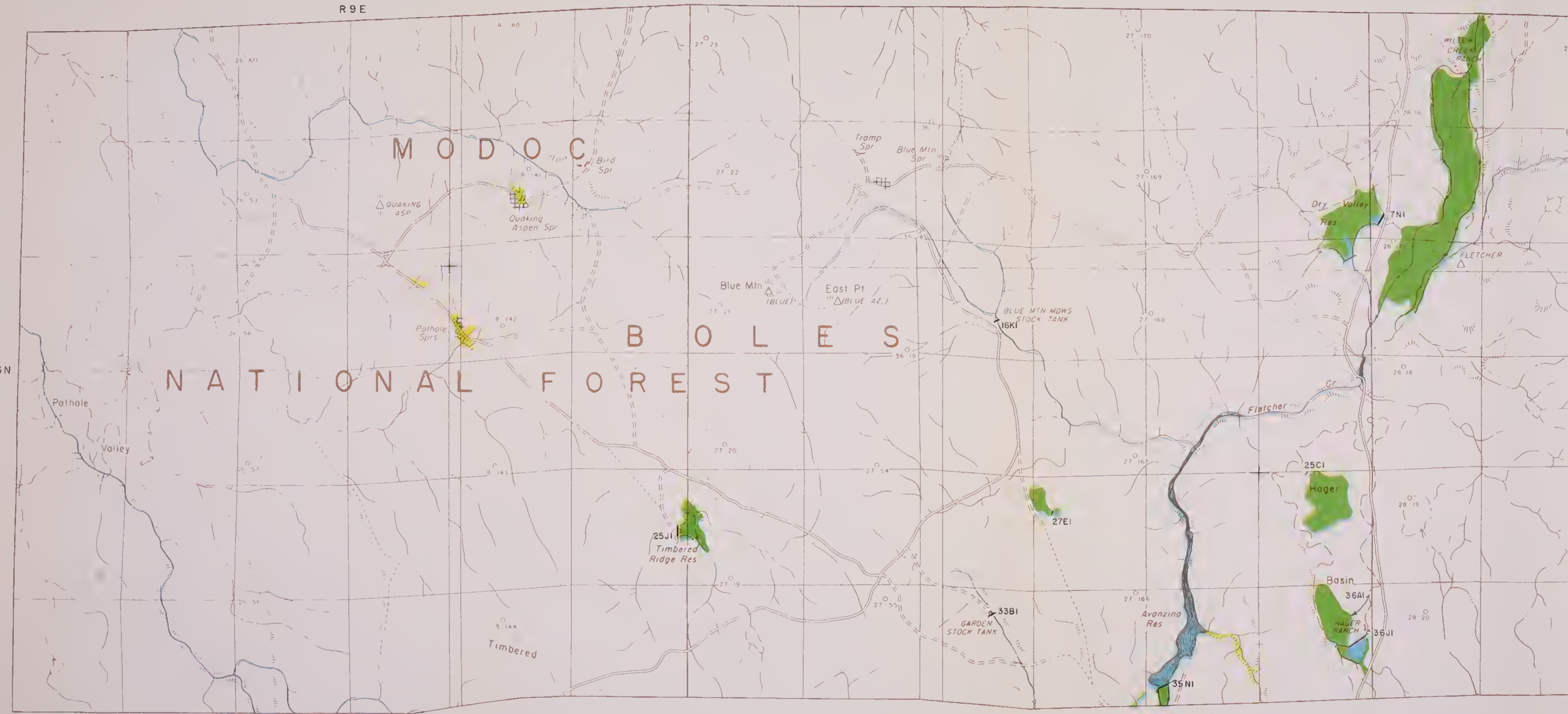
LAND AND WATER USE
AND
CLASSIFICATION OF RECREATIONAL LANDS
T 46 N, R 5-8 E, MOB 8 M
1959

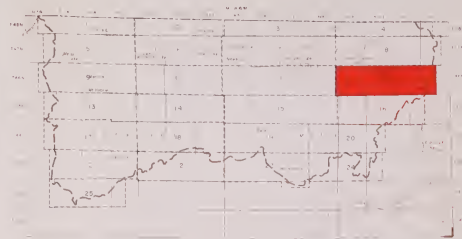
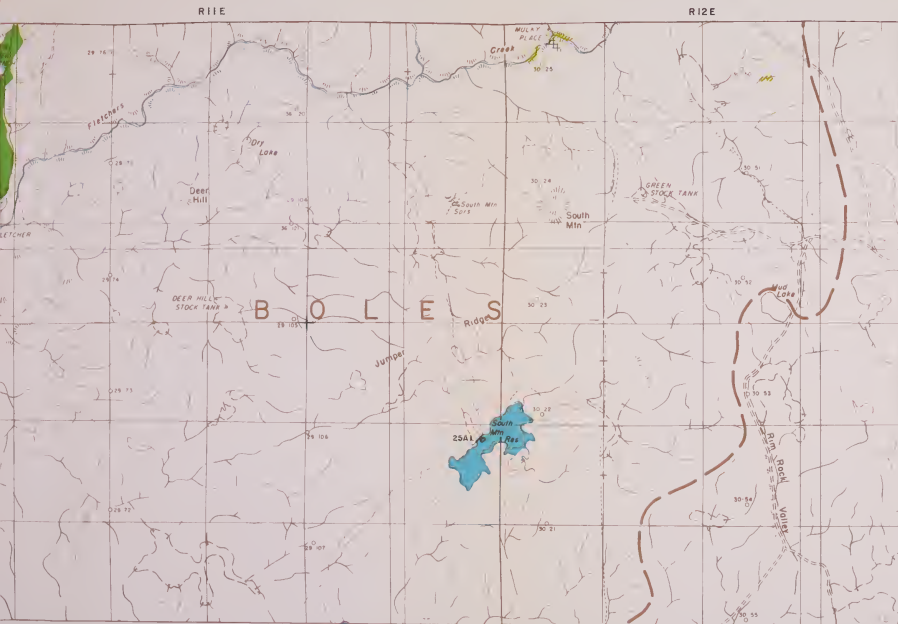
SCALE OF FEET
2000 0 2000 4000 6000

R9E

R10E

T46N





INDEX TO SHEETS



- GRAVITY DIVERSION
- PUMP DIVERSION
- DIVERSION CANAL OR DITCH
- NATURAL CHANNEL USED AS DITCH
- DIVERSION PIPE
- STREAM GAUGING STATION
- HYDROGRAPHIC UNIT BOUNDARY
- SUBUNIT BOUNDARY

LEGEND

- LAND, RELIEVING FILL, IRRIGATION
- LANDS RECEIVING PARTIAL IRRIGATION
- LANDS FULLY IRRIGATED BUT NOT FOLLOWING IRRIGATION
- LANDS IRRIGATED BY SURFACE WATER
- LANDS IRRIGATED BY SURFACE AND GRINDING WATER
- MEADOWLANDS
- MARSH LANDS
- DRY-FARMED LANDS
- URBAN LANDS
- RECREATIONAL LANDS
- POTENTIAL RECREATIONAL LANDS

KEY TO NUMBERING SYSTEM



DIVERSIONS SHOWN ARE NUMBERED BY TOWNSHIP, RANGE AND SUBDIVISION OF SECTION, e.g. D-43N/13W-2201

STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
NORTHERN BRANCH
LAND AND WATER USE
LOST RIVER BUTTE VALLEY
HYDROGRAPHIC UNIT
LAND AND WATER USE
AND
CLASSIFICATION OF RECREATIONAL LANDS
T 46 N, R 9-12 E, MDB 8M
1959

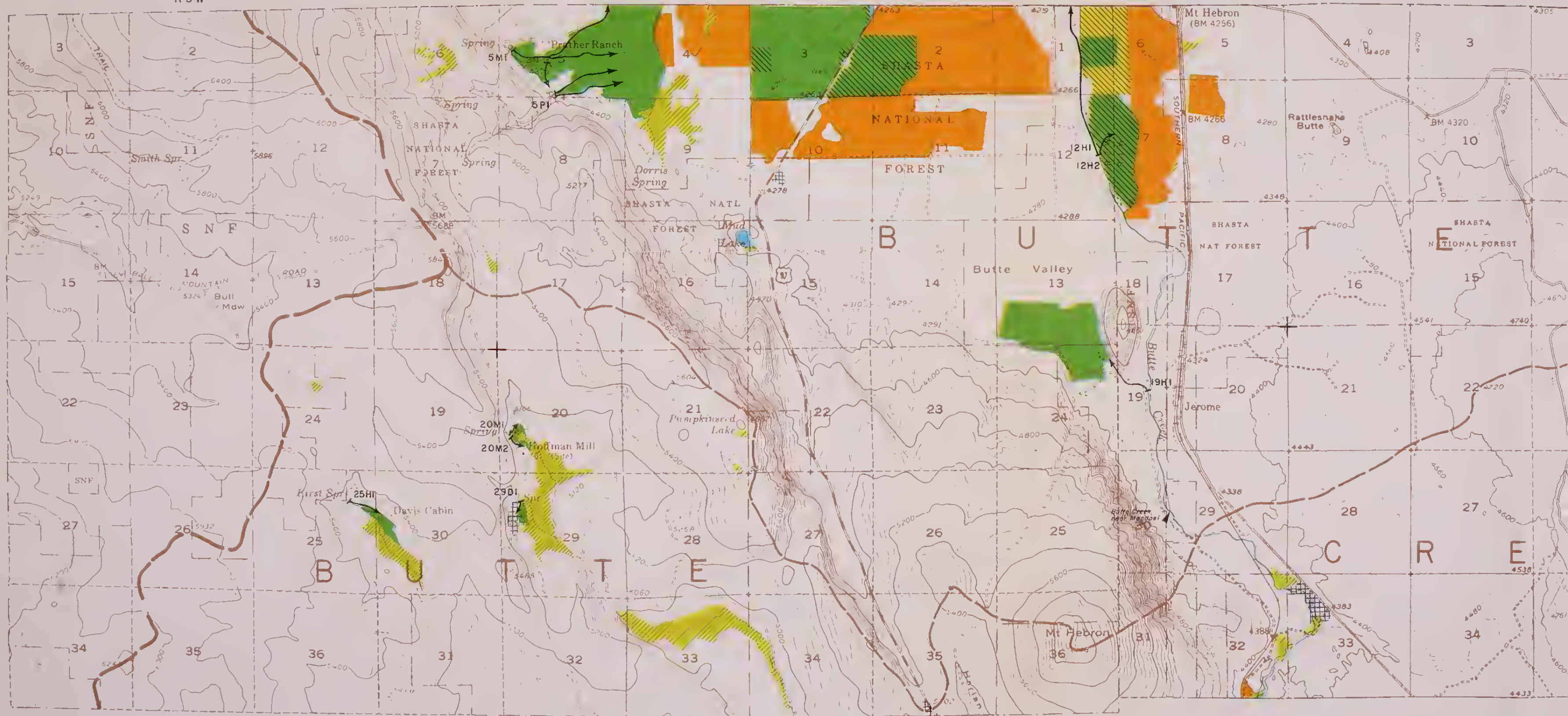
SCALE OF FEET
2000 4000 6000

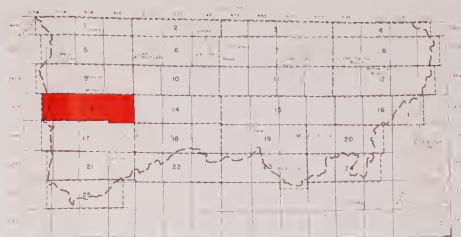
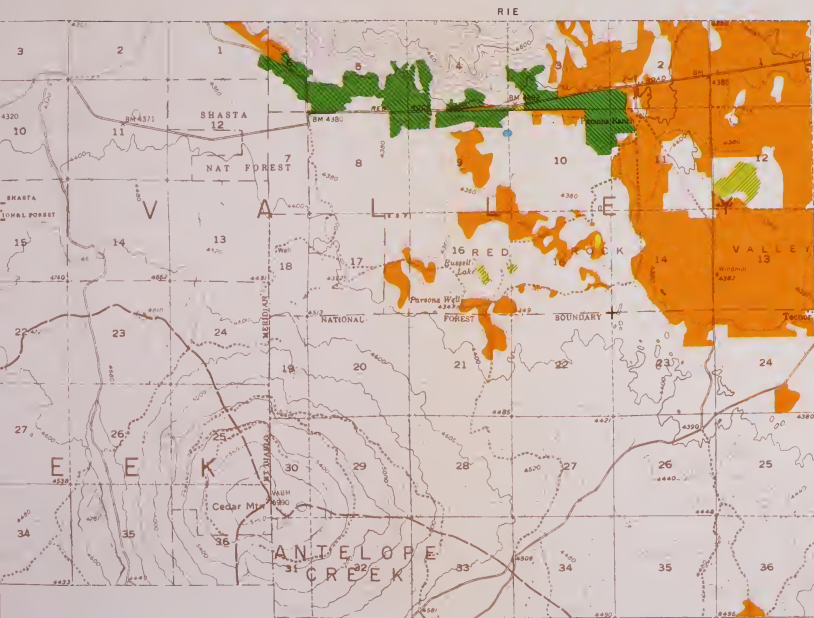
R 3 W

R 2 W

R 1 W

T 45 N





INDEX TO SHEETS

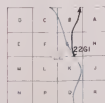


- GRAVITY DIVERSION
- PUMP DIVERSION
- DIVERSION CANAL OR DITCH
- NATURAL CHANNEL USED AS DITCH
- DIVERSION PIPE
- STREAM GAGING STATION
- HYDROGRAPHIC UNIT BOUNDARY
- SURMIT BOUNDARY

LEGEND

- LANDS RECEIVING FULL IRRIGATION
- LANDS RECEIVING PARTIAL IRRIGATION
- LANDS USUALLY IRRIGATED BUT IDLE OR FALLOW IN 1958
- LANDS IRRIGATED BY GROUND WATER
- LANDS IRRIGATED BY SURFACE AND GROUND WATER
- MEADOWLANDS
- MARSH LANDS
- DRY-FARMLANDS
- URBAN LANDS
- RECREATIONAL LANDS
- POTENTIAL RECREATIONAL LANDS

KEY TO NUMBERING SYSTEM



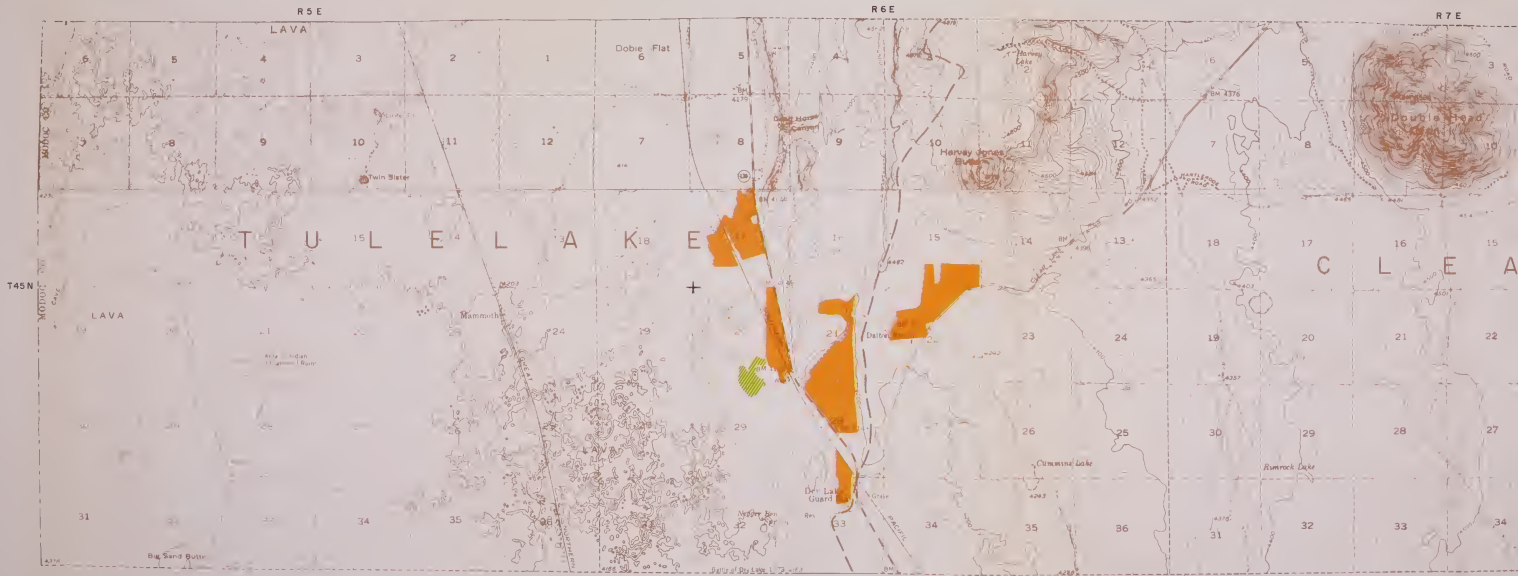
DIVERSIONS SHOWN ARE NUMBERED BY
TOWNSHIP RANGE AND SUBDIVISION OF
SECTION, e.g. D-43W/2W-23S1

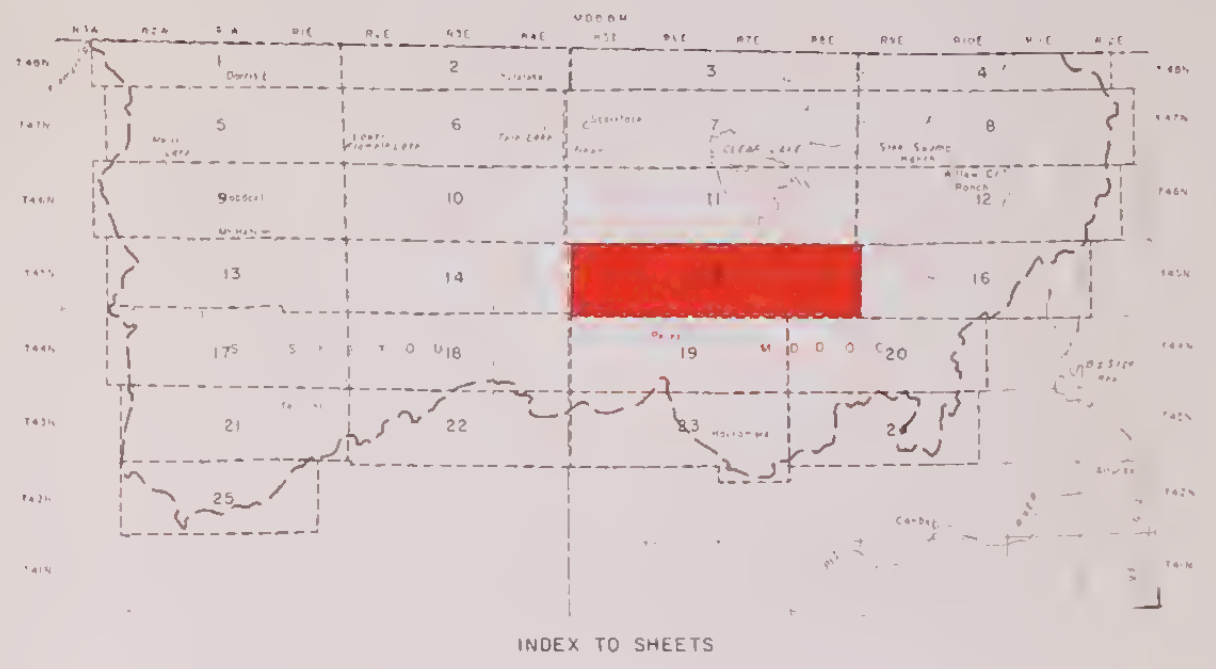
STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
NORTHERN BRANCH

LAND AND WATER USE
LOST RIVER BUTTE VALLEY
HYDROGRAPHIC UNIT

LAND AND WATER USE
AND
CLASSIFICATION OF RECREATIONAL LANDS
T 45 N, R 3W-1E, M 088 M
1959

SCALE OF FEET
2000 0 2000 4000 6000

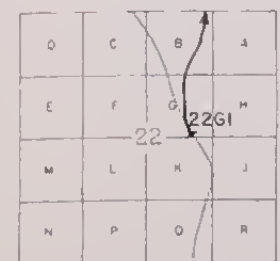




- GRAVITY DIVERSION
- PUMP DIVERSION
- DIVERSION CANAL OR DITCH
- NATURAL CHANNEL USED AS DITCH
- DIVERSION PIPE
- STREAM GAGING STATION
- HYDROGRAPHIC UNIT BOUNDARY
- SUBUNIT BOUNDARY

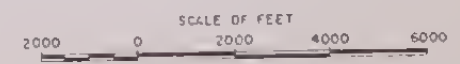
- LEGEND**
- LANDS RECEIVING FULL IRRIGATION
 - LANDS RECEIVING PARTIAL IRRIGATION
 - LANDS USUALLY IRRIGATED BUT IDLE OR FALLOW IN 1959
 - LANDS IRRIGATED BY GROUND WATER
 - LANDS IRRIGATED BY SURFACE AND GROUND WATER
 - MEADOWLANDS
 - MARSH LANDS
 - DRI-FARME LANDS
 - URBAN LANDS
 - RECREATIONAL LANDS
 - POTENTIAL RECREATIONAL LANDS

KEY TO NUMBERING SYSTEM



DIVERSIONS SHOWN ARE NUMBERED BY TOWNSHIP, RANGE AND SUBDIVISION OF SECTION, e.g. D-43H/2W-22GI

STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
NORTHERN BRANCH
LAND AND WATER USE
LOST RIVER BUTTE VALLEY
HYDROGRAPHIC UNIT
LAND AND WATER USE
AND
CLASSIFICATION OF RECREATIONAL LANDS
T 45 N, R 5-8 E, MDB 8 M
1959



R9E

R10E

T45N

CLEAR
LAKE

BOLES

Boles

Meadows

DITCH

FINDER BY
DITCHSALLY'S
CAMP

Boles

3K1
AVANTINO
RANCH

3R1

11E2

11E1

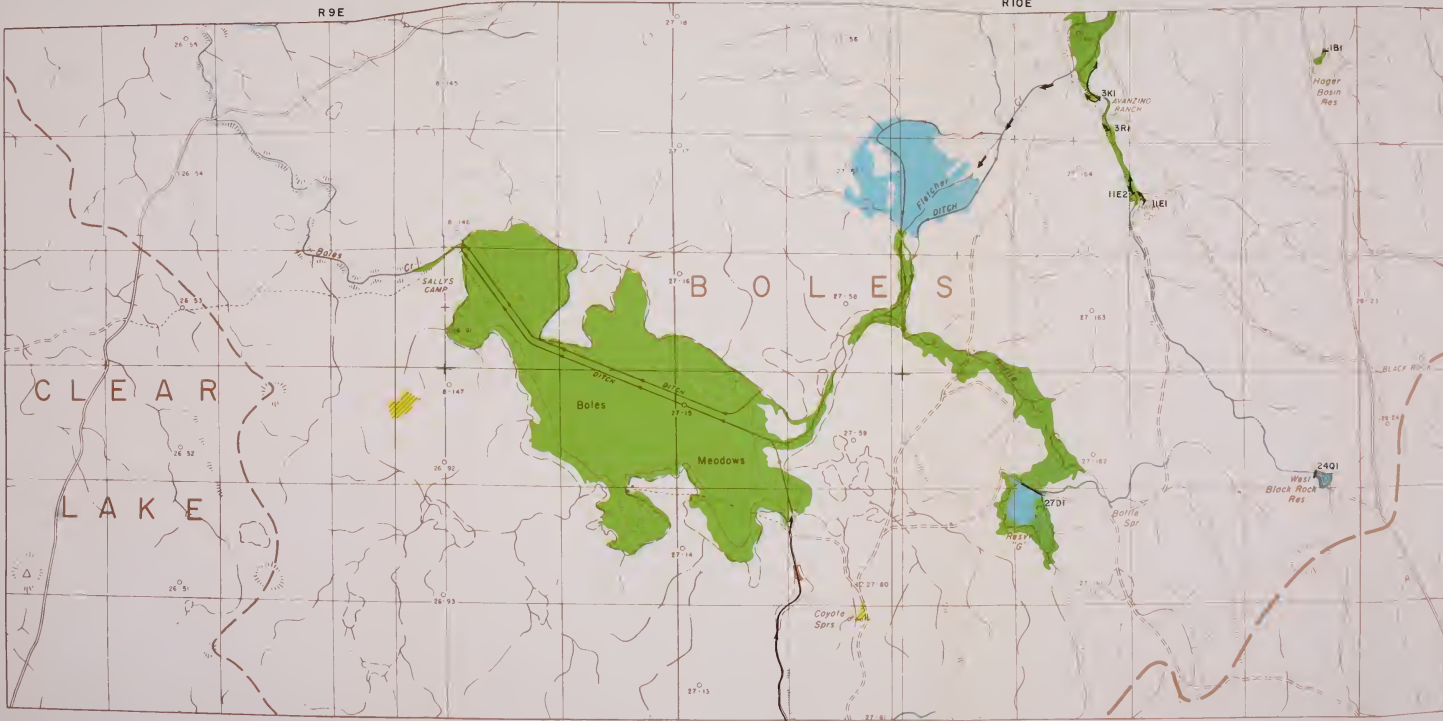
181

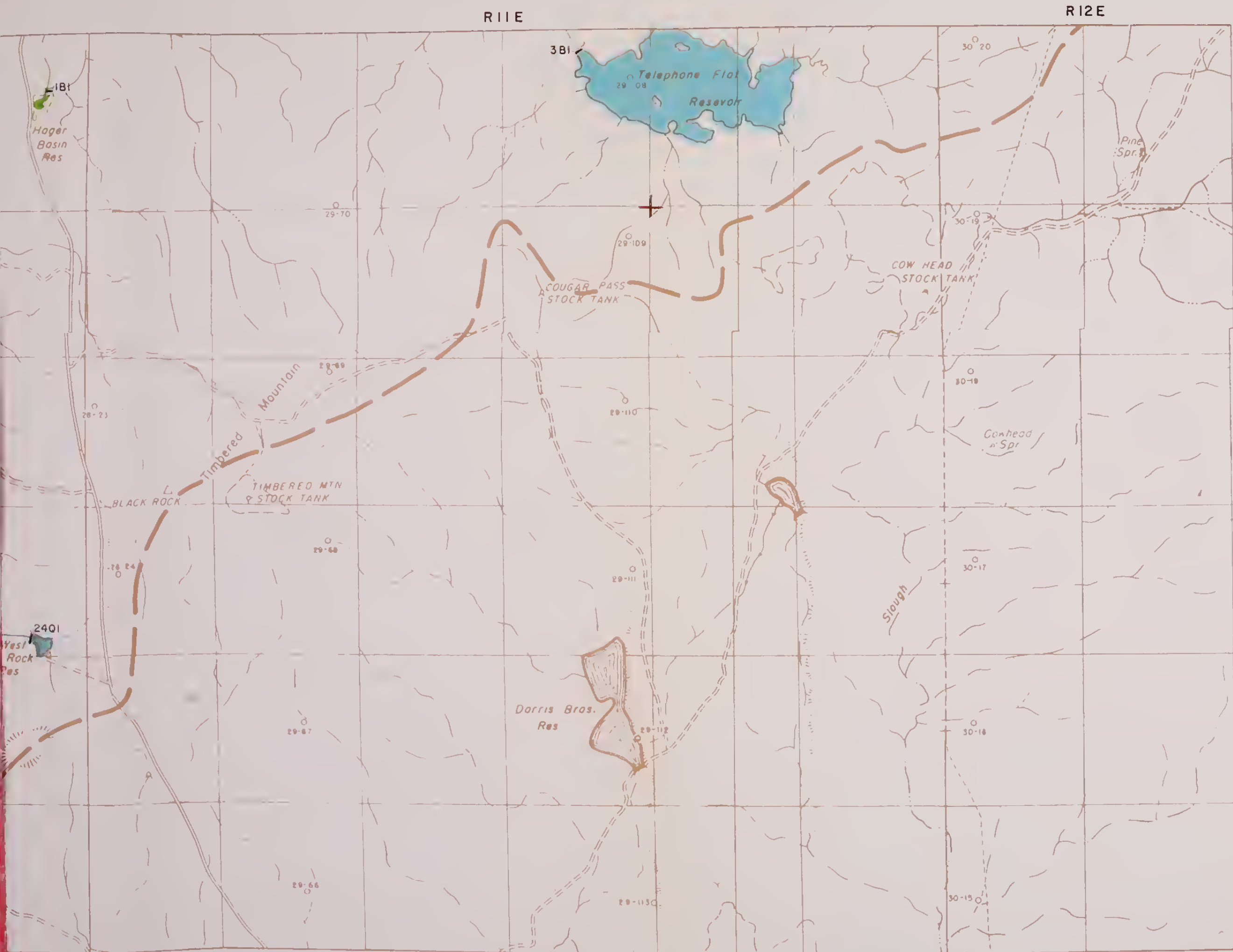
Hager
Bosch
Res

2401

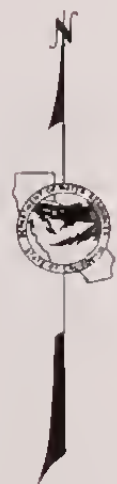
West
Black Rock
Res

Boile Spr

Coyote
Sprs



INDEX TO SHEETS

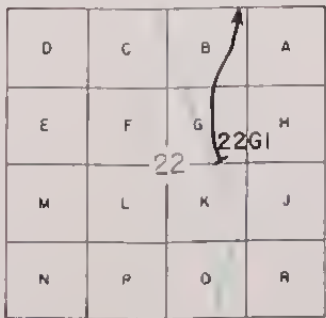


- GRAVITY DIVERSION
- PUMP DIVERSION
- DIVERSION CANAL OR DITCH
- NATURAL CHANNEL USED AS DITCH
- DIVERSION PIPE
- STREAM GAGING STATION
- HYDROGRAPHIC UNIT BOUNDARY
- SUBUNIT BOUNDARY

LEGEND

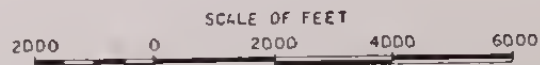
- LANDS RECEIVING FULL IRRIGATION
- LANDS RECEIVING PARTIAL IRRIGATION
- LANDS USUALLY IRRIGATED BUT IDLE OR FALLOW IN 1959
- LANDS IRRIGATED BY GROUND WATER
- LANDS IRRIGATED BY SURFACE AND GROUND WATER
- MEADOWLANDS
- MARSH LANDS
- DRY-FARMED LANDS
- URBAN LANDS
- RECREATIONAL LANDS
- POTENTIAL RECREATIONAL LANDS

KEY TO NUMBERING SYSTEM

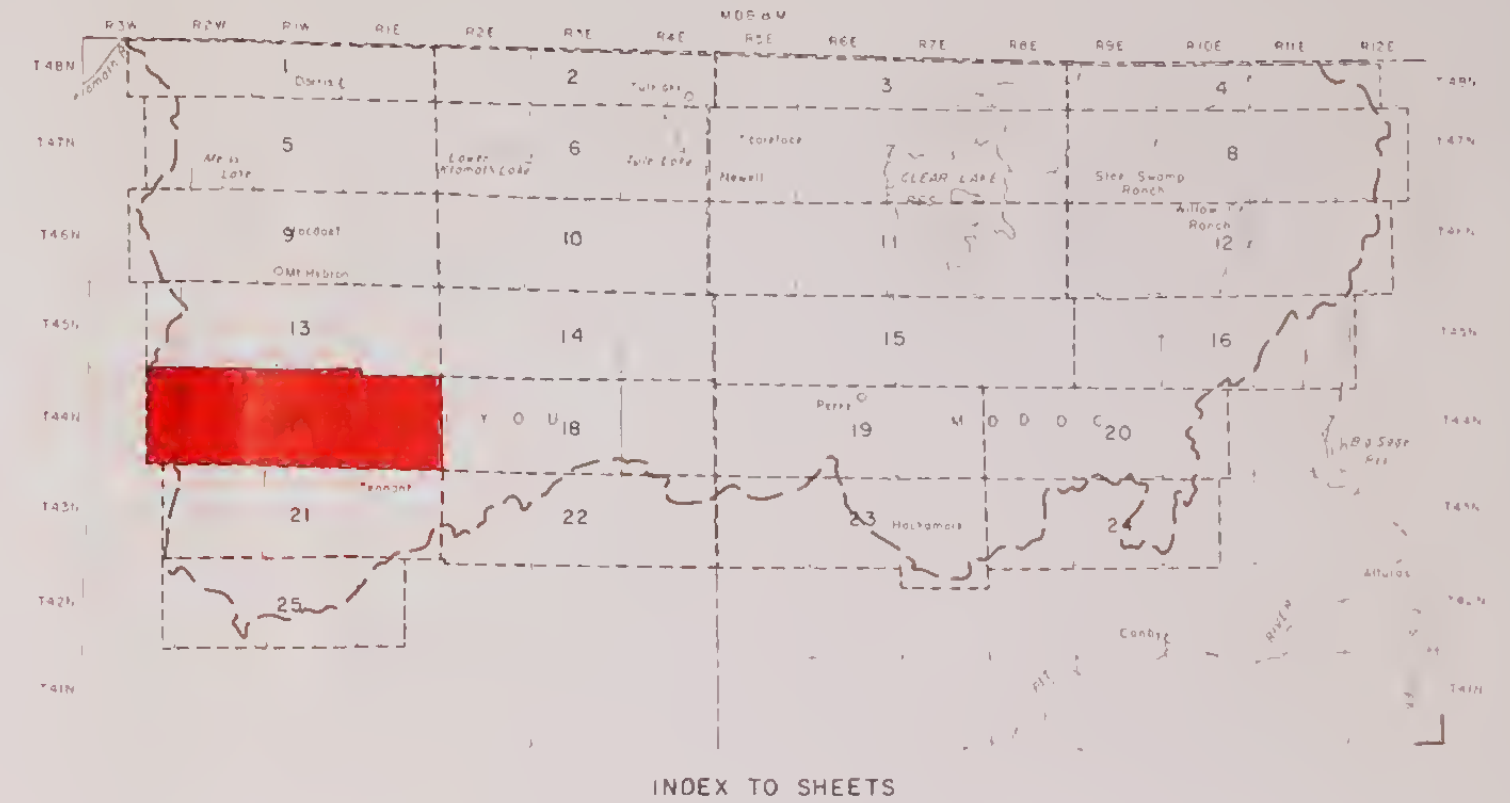
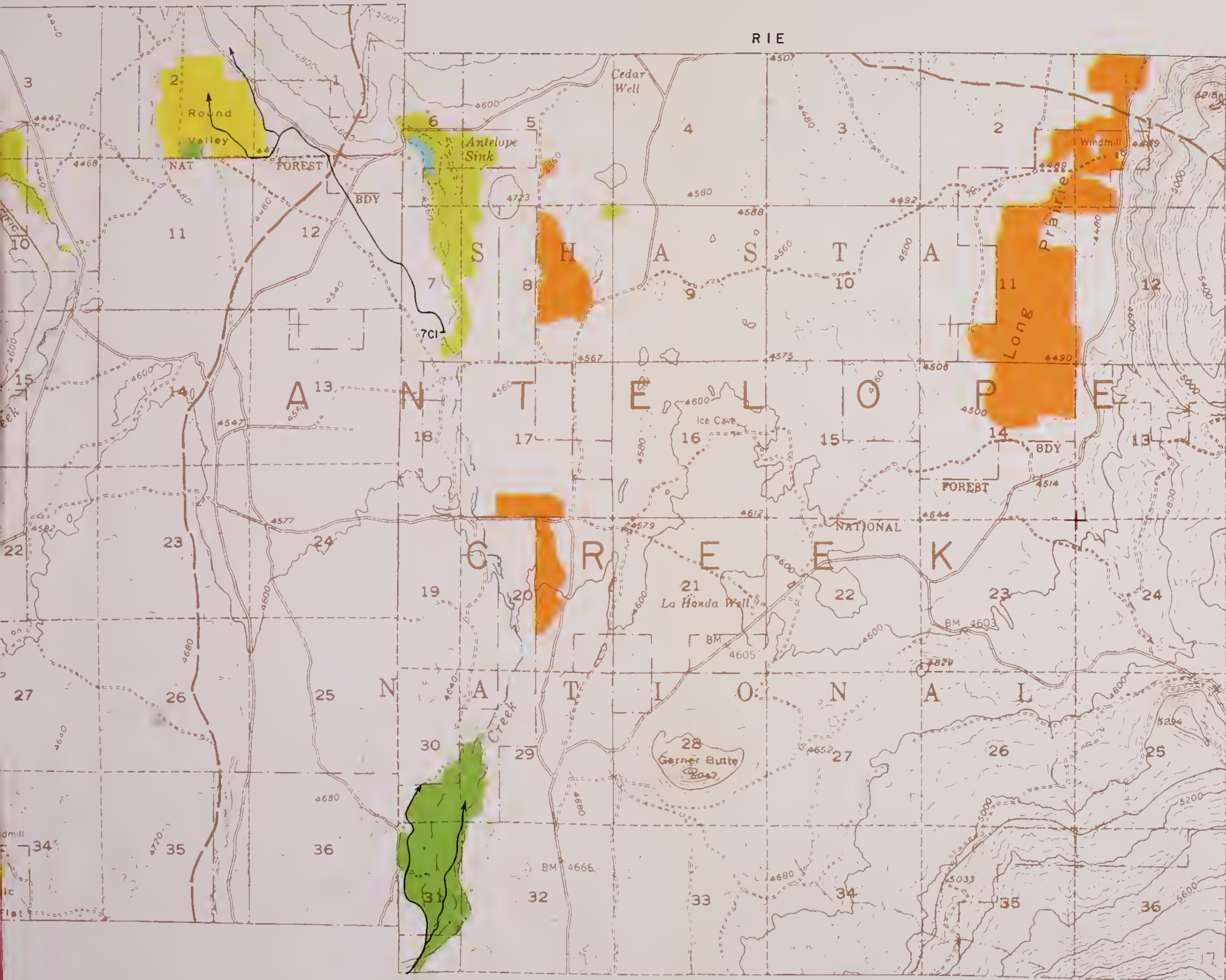


DIVERSIONS SHOWN ARE NUMBERED BY TOWNSHIP, RANGE AND SUBDIVISION OF SECTION, e.g. D-43N/2W-22G1

STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
NORTHERN BRANCH
**LAND AND WATER USE
LOST RIVER BUTTE VALLEY
HYDROGRAPHIC UNIT**
**LAND AND WATER USE
AND
CLASSIFICATION OF RECREATIONAL LANDS**
T 45 N, R 9-12 E, MDB&M
1959



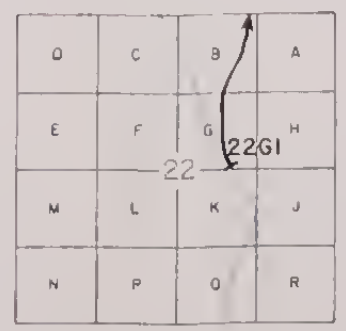




- GRAVITY DIVERSION
- PUMP DIVERSION
- DIVERSION CANAL OR DITCH
- NATURAL CHANNEL USED AS DITCH
- DIVERSION PIPE
- STREAM GAGING STATION
- HYDROGRAPHIC UNIT BOUNDARY
- SUBUNIT BOUNDARY

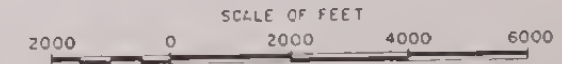
- LEGEND**
- LANDS RECEIVING FULL IRRIGATION
 - LANDS RECEIVING PARTIAL IRRIGATION
 - LANDS USUALLY IRRIGATED BUT IDLE OR FALLOW IN 1959
 - LANDS IRRIGATED BY GROUND WATER
 - LANDS IRRIGATED BY SURFACE AND GROUND WATER
 - MEADOWLANDS
 - MARSH LANDS
 - ORY-FARMED LANDS
 - URBAN LANDS
 - RECREATIONAL LANDS
 - POTENTIAL RECREATIONAL LANDS

KEY TO NUMBERING SYSTEM



DIVERSIONS SHOWN ARE NUMBERED BY TOWNSHIP, RANGE AND SUBDIVISION OF SECTION, e.g. D-43N/2W-22G1

STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
NORTHERN BRANCH
**LAND AND WATER USE
LOST RIVER BUTTE VALLEY
HYDROGRAPHIC UNIT**
**LAND AND WATER USE
AND
CLASSIFICATION OF RECREATIONAL LANDS**
T 44 N, R 3 W - 1 E, MOB&M
1959



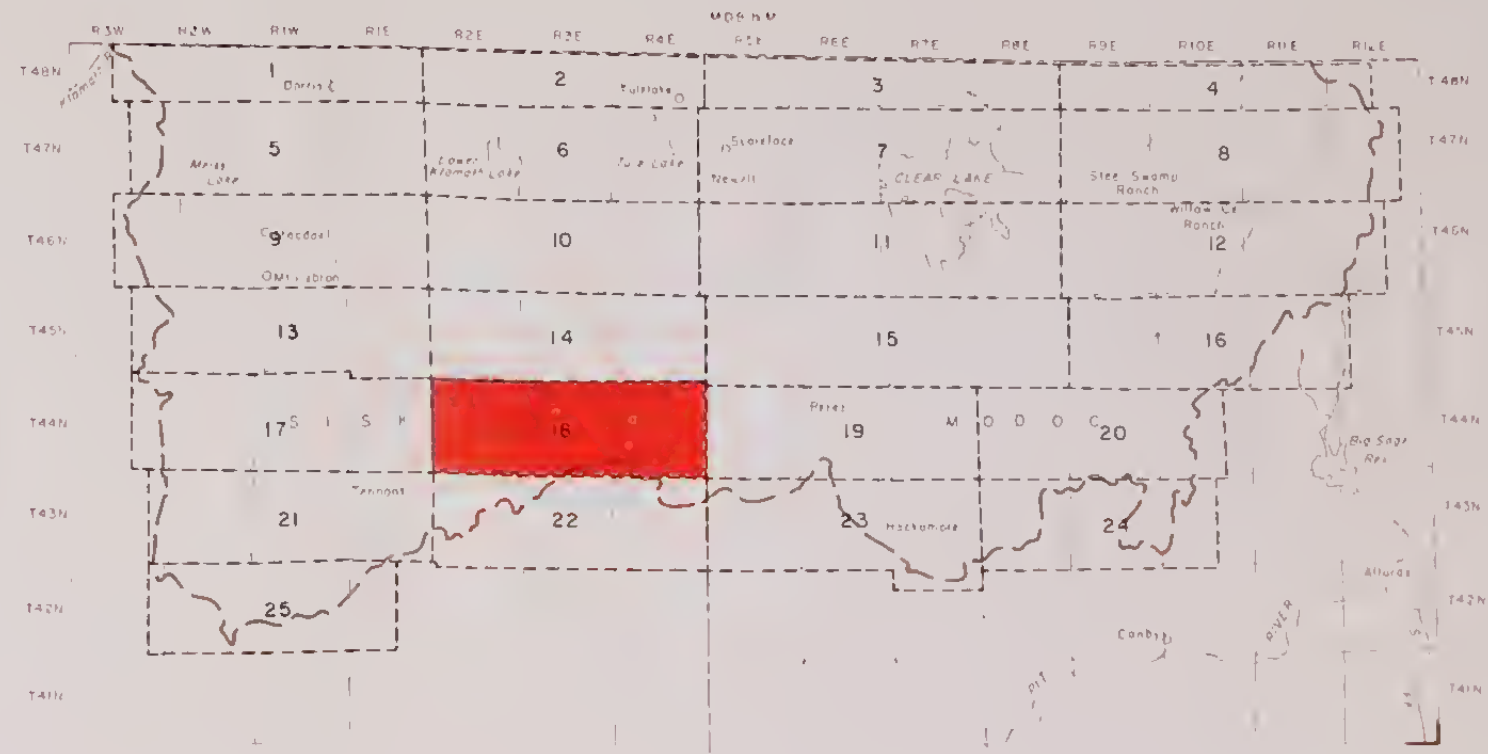
R2E

R3E

T44N



R 4 E



INDEX TO SHEETS

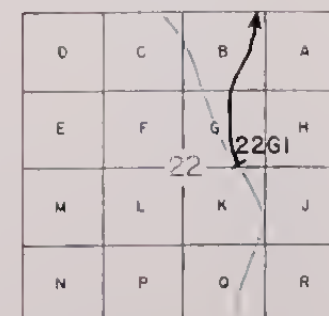


- GRAVITY DIVERSION
- PUMP DIVERSION
- DIVERSION CANAL OR DITCH
- NATURAL CHANNEL USED AS DITCH
- DIVERSION PIPE
- STREAM GAGING STATION
- HYDROGRAPHIC UNIT BOUNDARY
- SUBUNIT BOUNDARY

LEGEND

- LANDS RECEIVING FULL IRRIGATION
- LANDS RECEIVING PARTIAL IRRIGATION
- LANDS USUALLY IRRIGATED BUT IDLE OR FALLOW IN 1959
- LANDS IRRIGATED BY GROUND WATER
- LANDS IRRIGATED BY SURFACE AND GROUND WATER
- MEADOWLANDS
- MARSH LANDS
- DRY-FARMED LANDS
- URBAN LANDS
- RECREATIONAL LANDS
- POTENTIAL RECREATIONAL LANDS

KEY TO NUMBERING SYSTEM



DIVERSIONS SHOWN ARE NUMBERED BY TOWNSHIP, RANGE AND SUBDIVISION OF SECTION, e.g. D-43N/2W-22G1

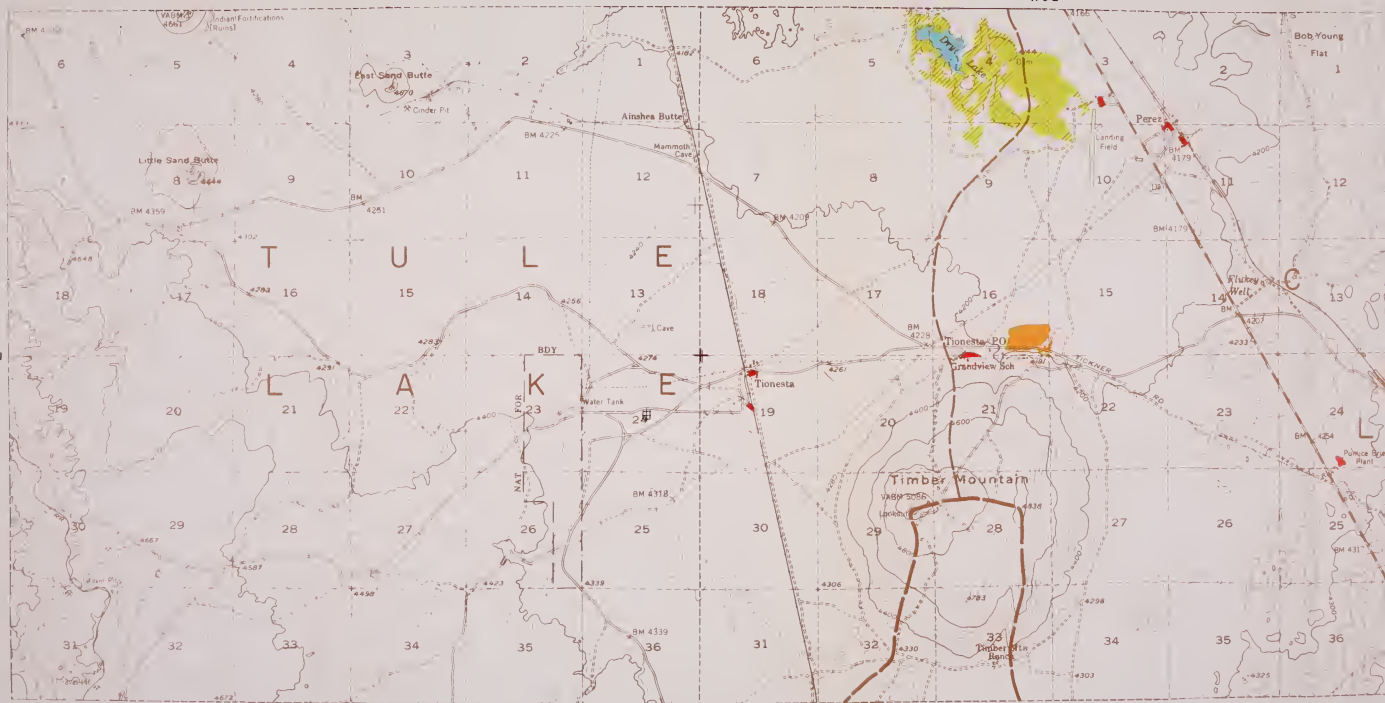
STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
NORTHERN BRANCH
**LAND AND WATER USE
LOST RIVER BUTTE VALLEY
HYDROGRAPHIC UNIT**
**LAND AND WATER USE
AND
CLASSIFICATION OF RECREATIONAL LANDS**
T 44 N, R 2-4 E, MD 68 M
1959

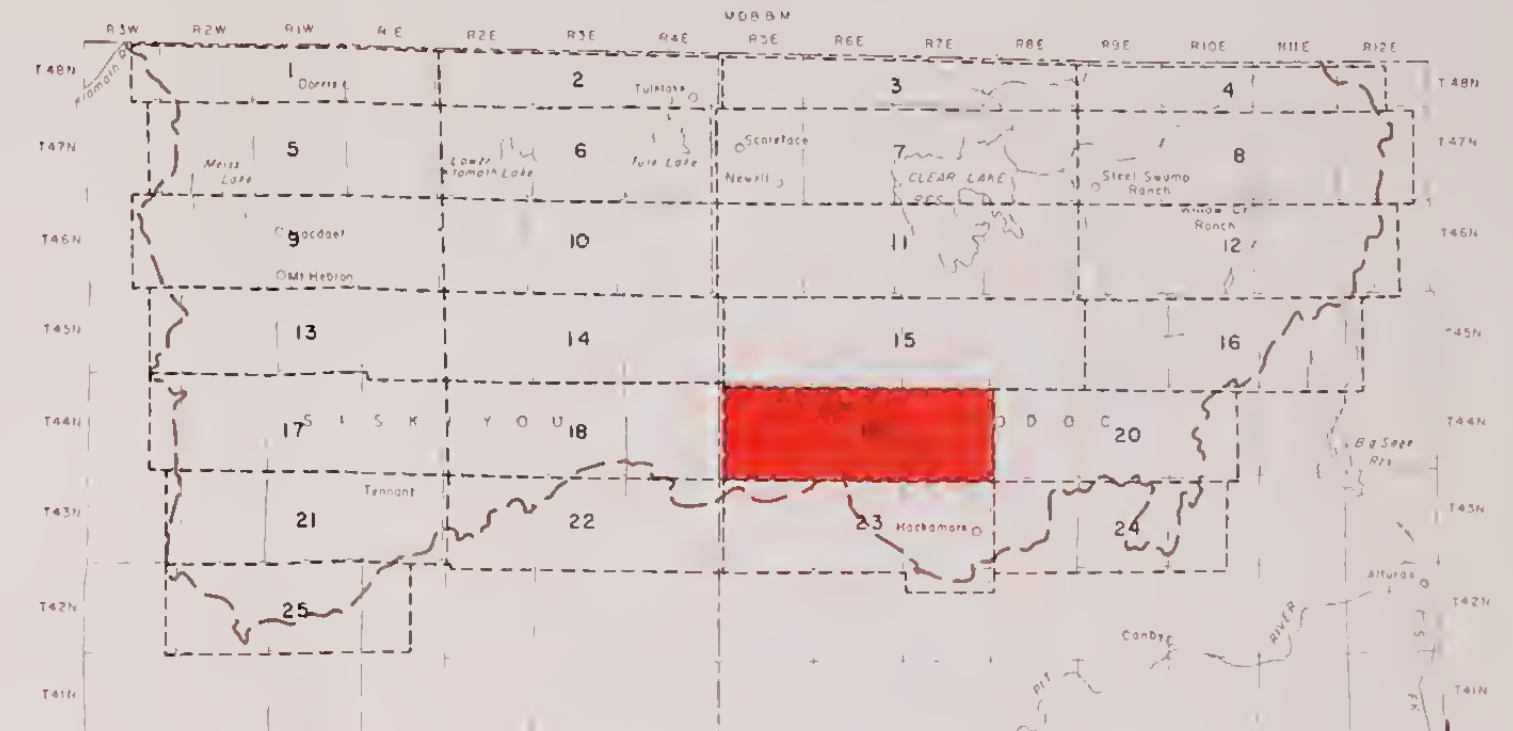
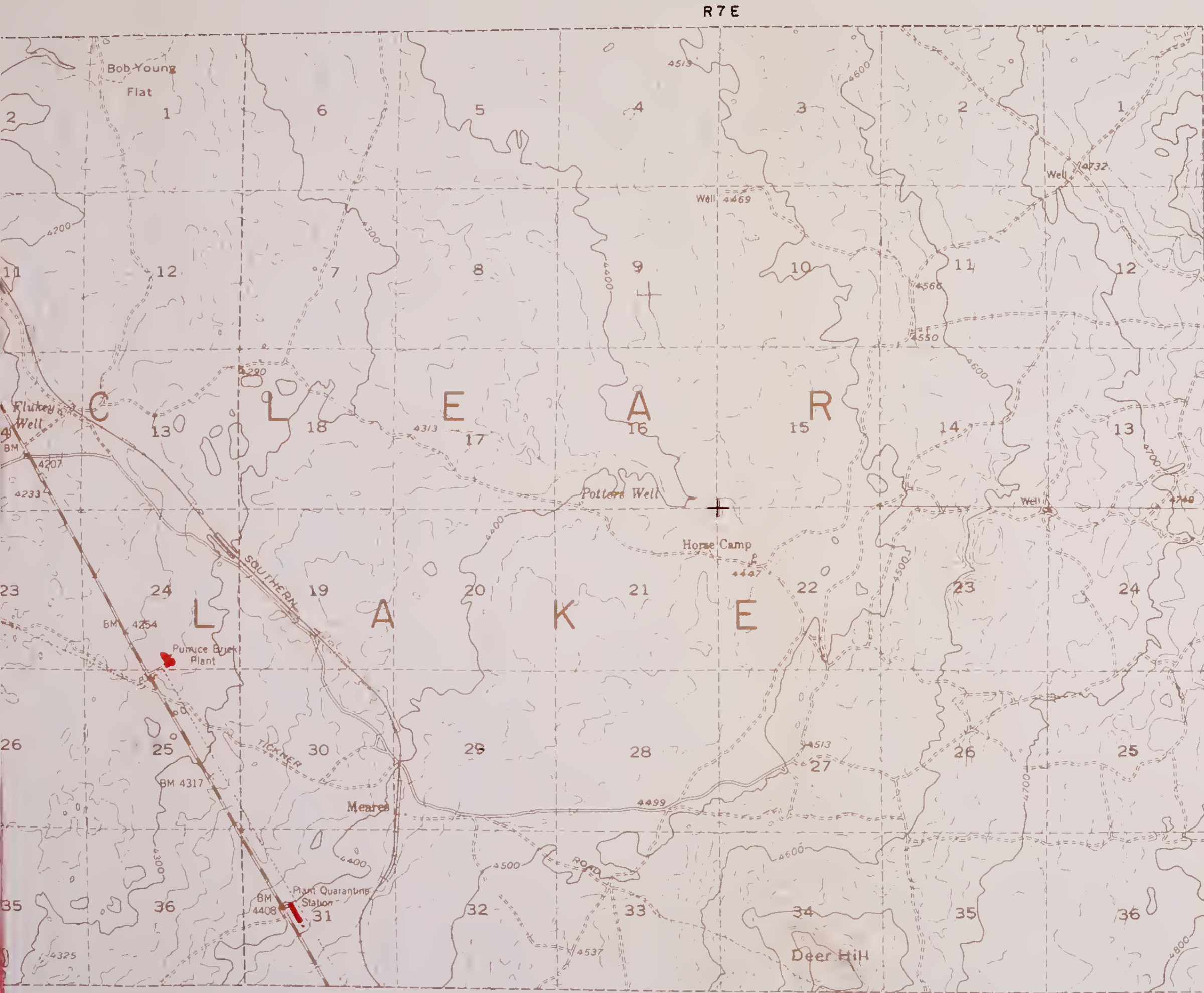
SCALE OF FEET
2000 0 2000 4000 6000

R 5 E

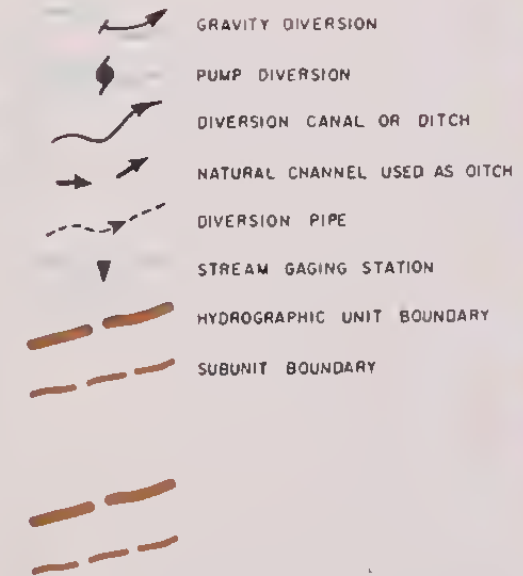
R 6 E

T 44 N





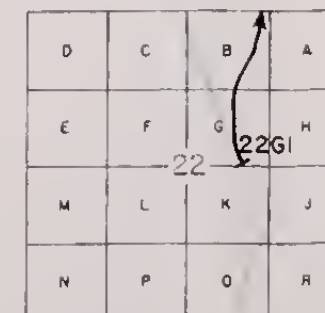
INDEX TO SHEETS



LEGEND

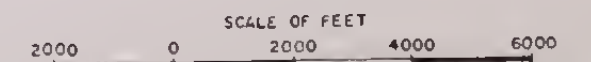


KEY TO NUMBERING SYSTEM



DIVERSIONS SHOWN ARE NUMBERED BY
TOWNSHIP, RANGE AND SUBDIVISION OF
SECTION, e.g. D-43N/2W-22G1

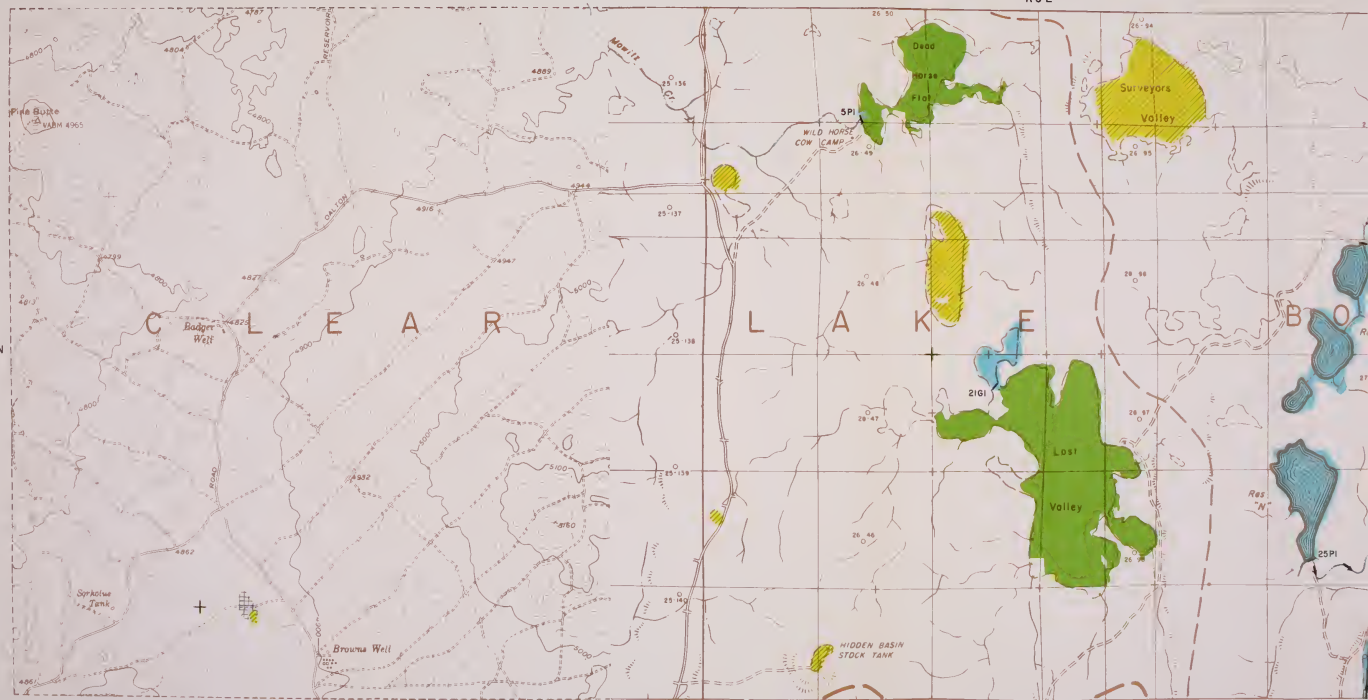
STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
NORTHERN BRANCH
**LAND AND WATER USE
LOST RIVER BUTTE VALLEY
HYDROGRAPHIC UNIT**
**LAND AND WATER USE
AND
CLASSIFICATION OF RECREATIONAL LANDS**
T 44 N, R 5-7 E, MDB&M
1959

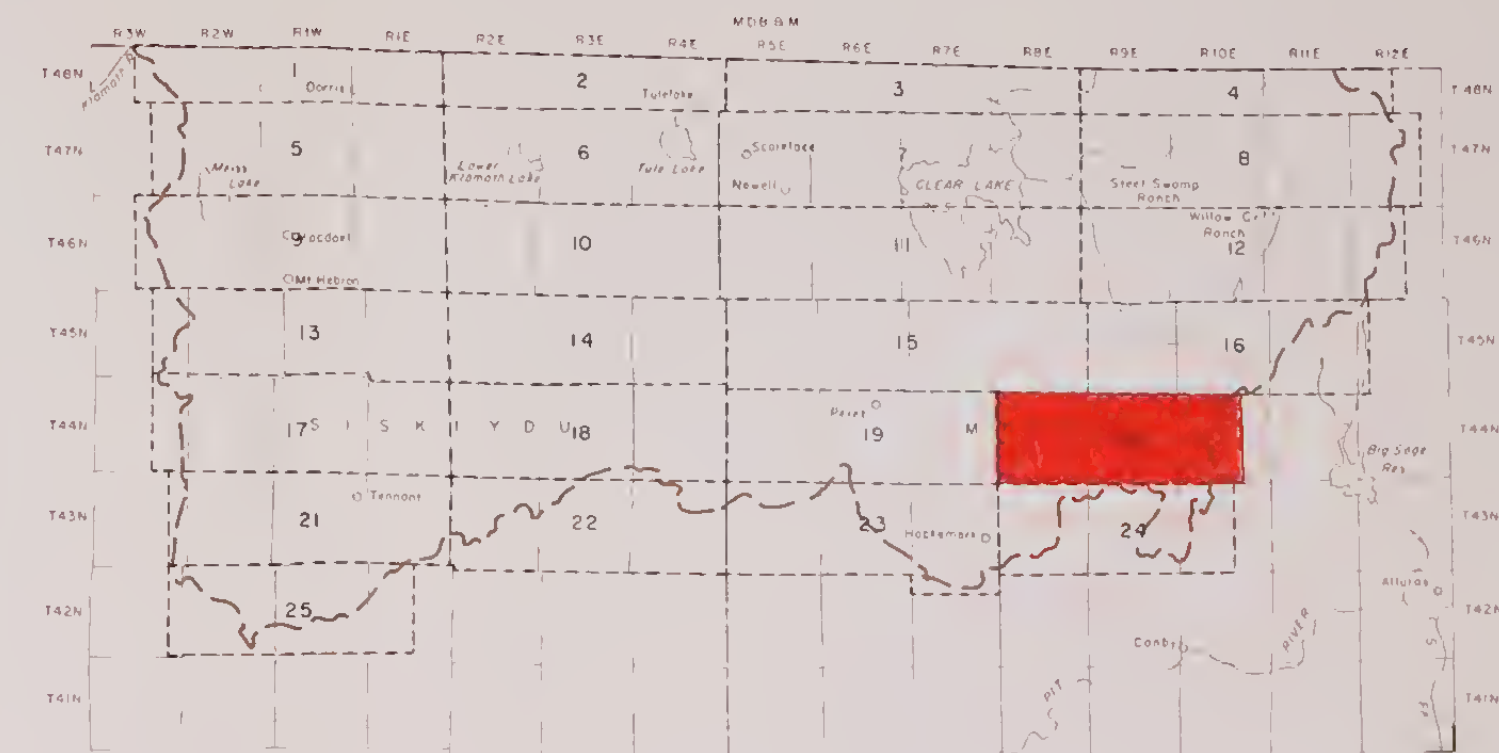
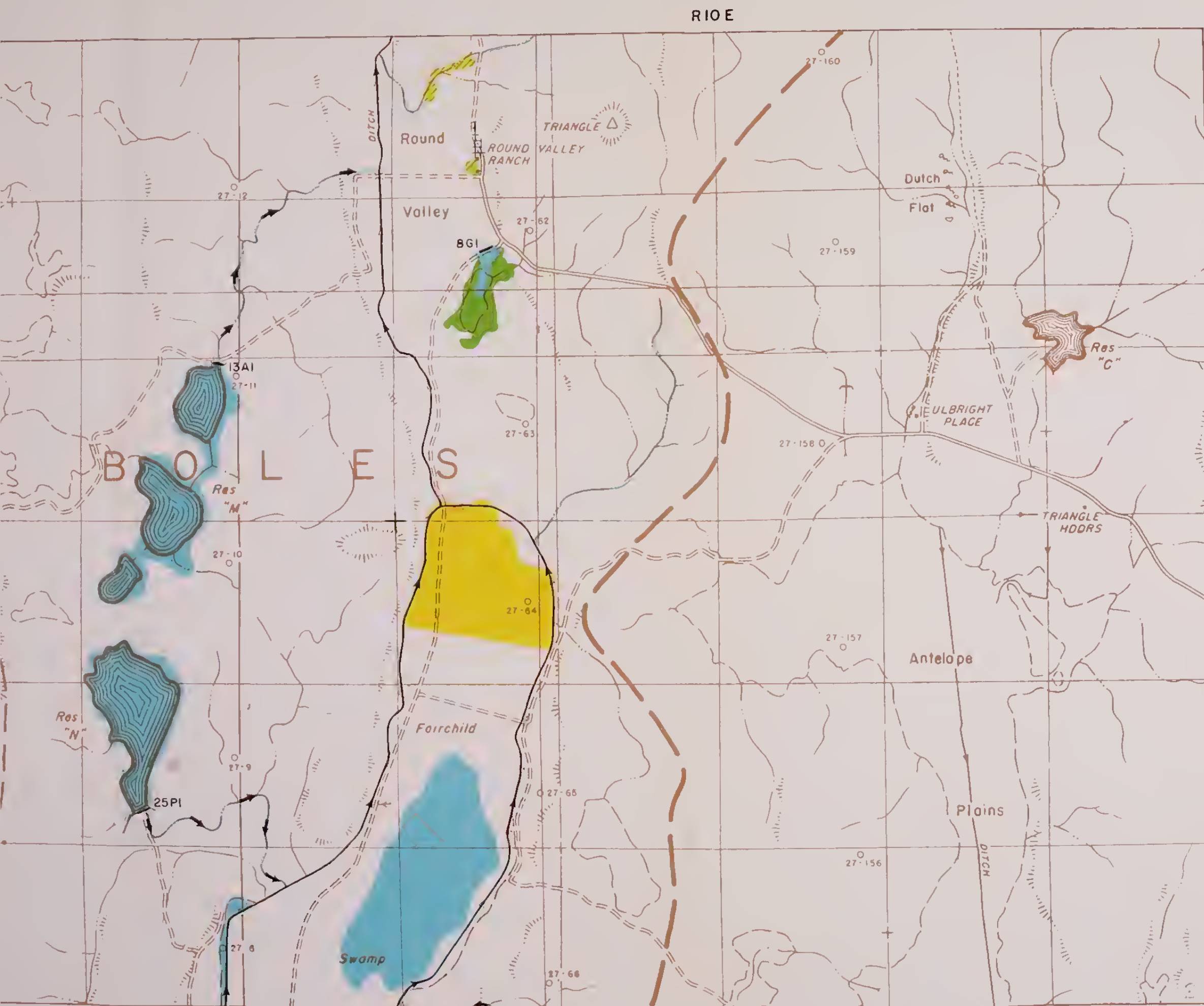


R8E

R9E

T44N





INDEX TO SHEETS

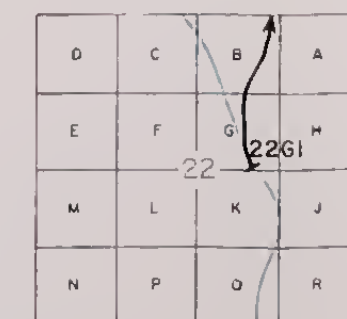


- GRAVITY DIVERSION
- PUMP DIVERSION
- DIVERSION CANAL OR DITCH
- NATURAL CHANNEL USED AS DITCH
- DIVERSION PIPE
- STREAM GAGING STATION
- HYDROGRAPHIC UNIT BOUNDARY
- SUBUNIT BOUNDARY

LEGEND

- LANDS RECEIVING FULL IRRIGATION
- LANDS RECEIVING PARTIAL IRRIGATION
- LANDS USUALLY IRRIGATED BUT IDLE OR FALLOW IN 1959
- LANDS IRRIGATED BY GROUND WATER
- LANDS IRRIGATED BY SURFACE AND GROUND WATER
- MEADOWLANDS
- MARSH LANDS
- DRY-FARMED LANDS
- URBAN LANDS
- RECREATIONAL LANDS
- POTENTIAL RECREATIONAL LANDS

KEY TO NUMBERING SYSTEM



DIVERSIONS SHOWN ARE NUMBERED BY TOWNSHIP, RANGE AND SUBDIVISION OF SECTION, e.g. D-43N/2W-22G1

STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
NORTHERN BRANCH
**LAND AND WATER USE
LOST RIVER BUTTE VALLEY
HYDROGRAPHIC UNIT**
**LAND AND WATER USE
AND
CLASSIFICATION OF RECREATIONAL LANDS**
T 44 N, R 8-10 E, MDB&M
1959



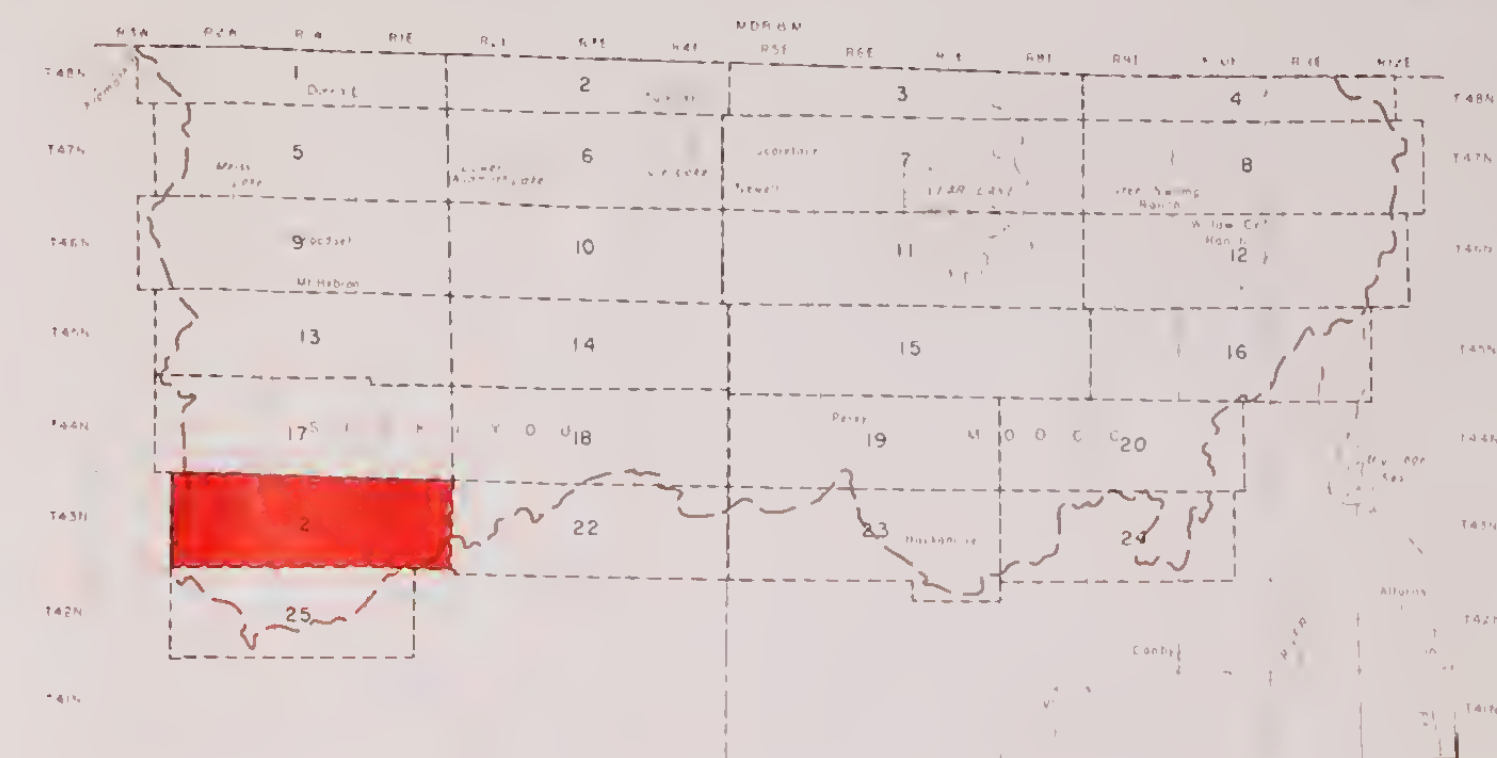
R3W

R2W

R1W

T43N





- GRAVITY DIVERSION
- PUMP DIVERSION
- DIVERSION CANAL OR DITCH
- NATURAL CHANNEL USED AS DITCH
- DIVERSION PIPE
- STREAM GAGING STATION
- HYDROGRAPHIC UNIT BOUNDARY
- SUBUNIT BOUNDARY

LEGEND

- LANDS RECEIVING FULL IRRIGATION
- LANDS RECEIVING PARTIAL IRRIGATION
- LANDS USUALLY IRRIGATED BUT IDLE OR FALLOW IN 1959
- LANDS IRRIGATED BY GROUND WATER
- LANDS IRRIGATED BY SURFACE AND GROUND WATER
- MEADOWLANDS
- MARSH LANDS
- DRY-FARMED LANDS
- URBAN LANDS
- RECREATIONAL LANDS
- POTENTIAL RECREATIONAL LANDS

KEY TO NUMBERING SYSTEM

D	C	B	A
E	F	G	H
M	L	K	J
N	P	O	R

DIVERSIONS SHOWN ARE NUMBERED BY TOWNSHIP, RANGE AND SUBDIVISION OF SECTION, e.g. D-43N/2W-22G1

STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
NORTHERN BRANCH
LAND AND WATER USE
LOST RIVER BUTTE VALLEY
HYDROGRAPHIC UNIT
LAND AND WATER USE
AND
CLASSIFICATION OF RECREATIONAL LANDS
T 43 N, R 3 W-1 E, M 8 & M
1959

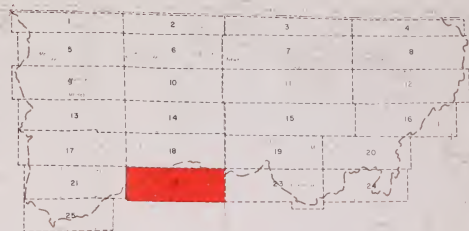
SCALE OF FEET
2000 0 2000 4000 6000

R 2 E

R 3 E

T 43 N





INDEX TO SHEETS

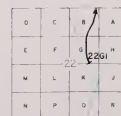


- GRAVITY DIVERSION
- PUMP DIVERSION
- DIVERSION CANAL OR DITCH
- NATURAL CHANNEL USED AS DITCH
- DIVERSION PIPE
- STREAM GAGING STATION
- HYDROGRAPHIC UNIT BOUNDARY
- SUBUNIT BOUNDARY

LEGEND

- LANDS RECEIVING FULL IRRIGATION
- LANDS RECEIVING PARTIAL IRRIGATION
- LANDS USUALLY IRRIGATED BUT IDLE OR FALLOW IN 1959
- LANDS IRRIGATED BY GROUND WATER
- LANDS IRRIGATED BY SURFACE AND GROUND WATER
- MEADOWLANDS
- MARSH LANDS
- DRY-FARMED LANDS
- URBAN LANDS
- RECREATIONAL LANDS
- POTENTIAL RECREATIONAL LANDS

KEY TO NUMBERING SYSTEM



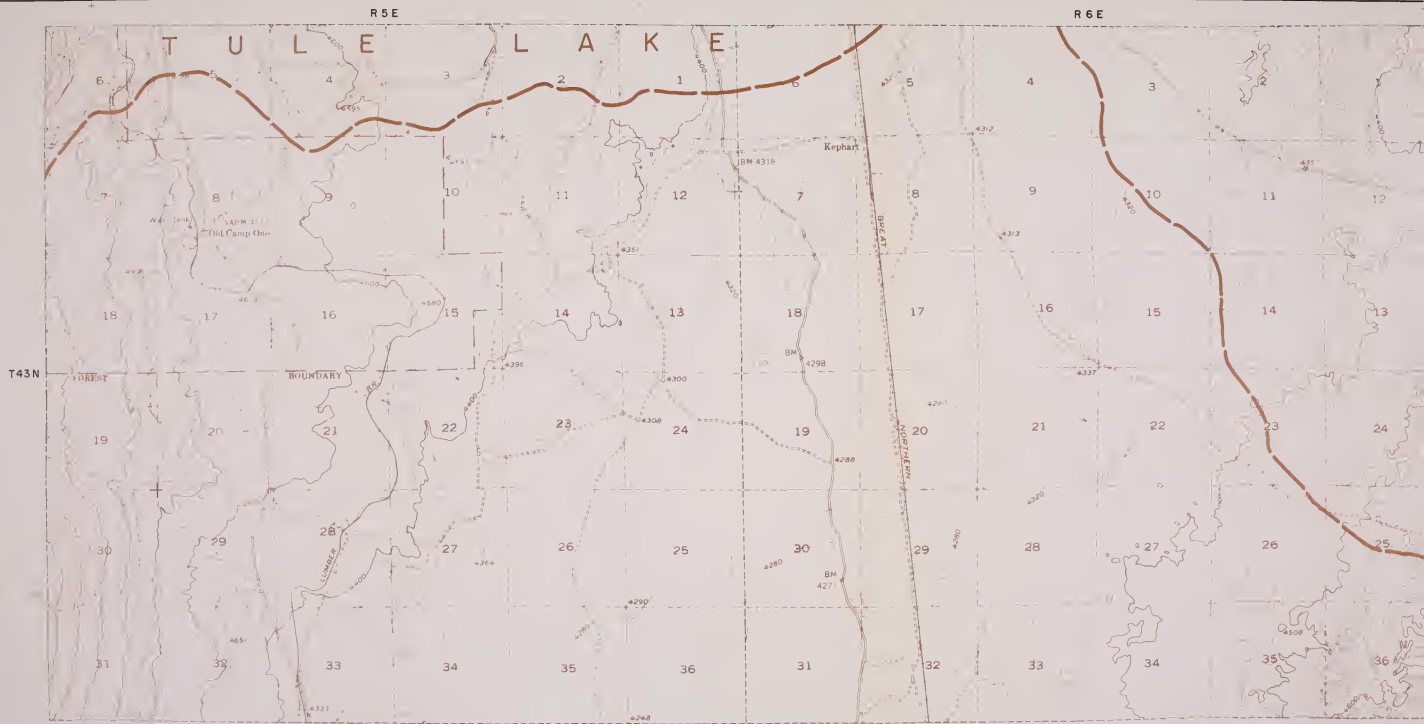
DIVERSIONS SHOWN ARE NUMBERED BY
TOWNSHIP, RANGE AND SUBDIVISION OF
SECTION, e.g. 0-43N/2W-22GI

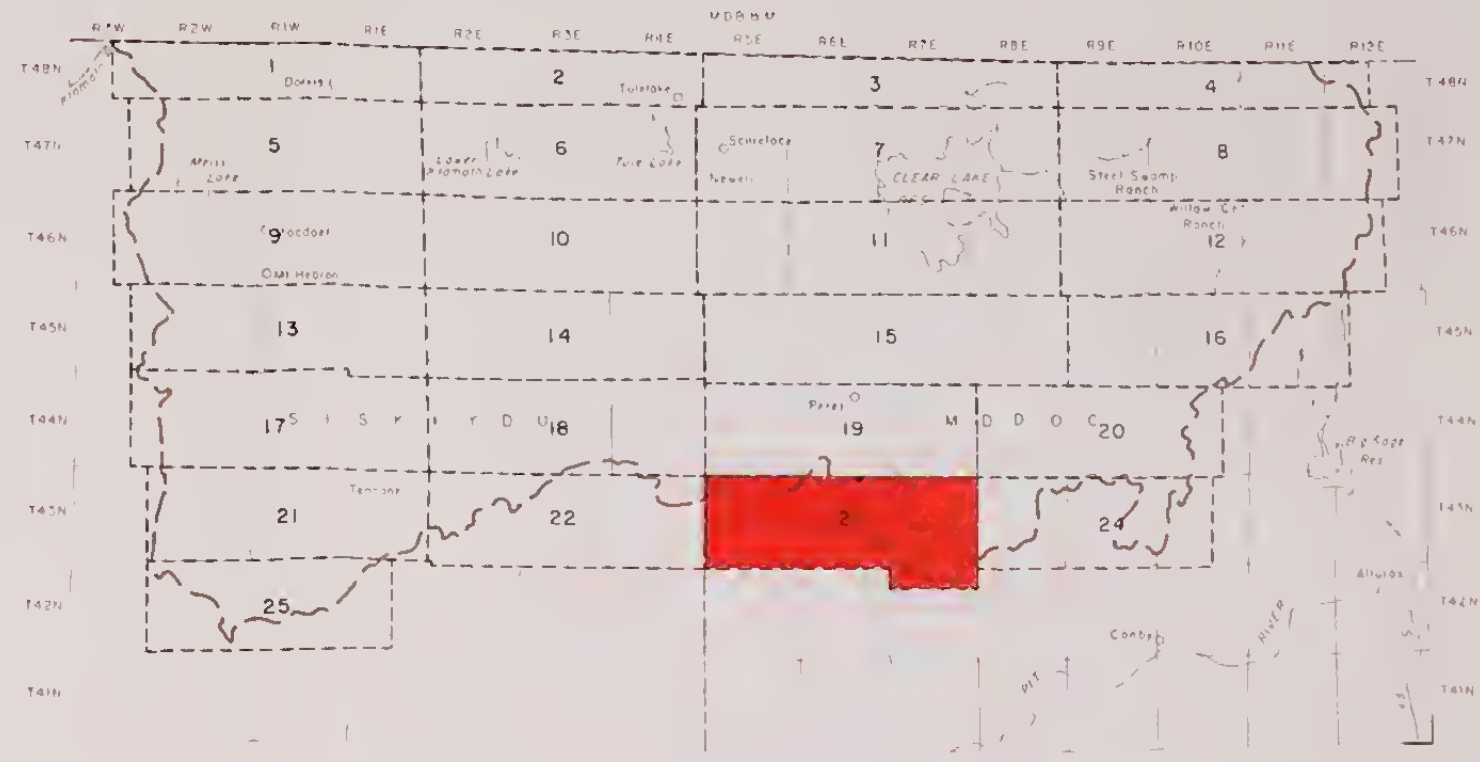
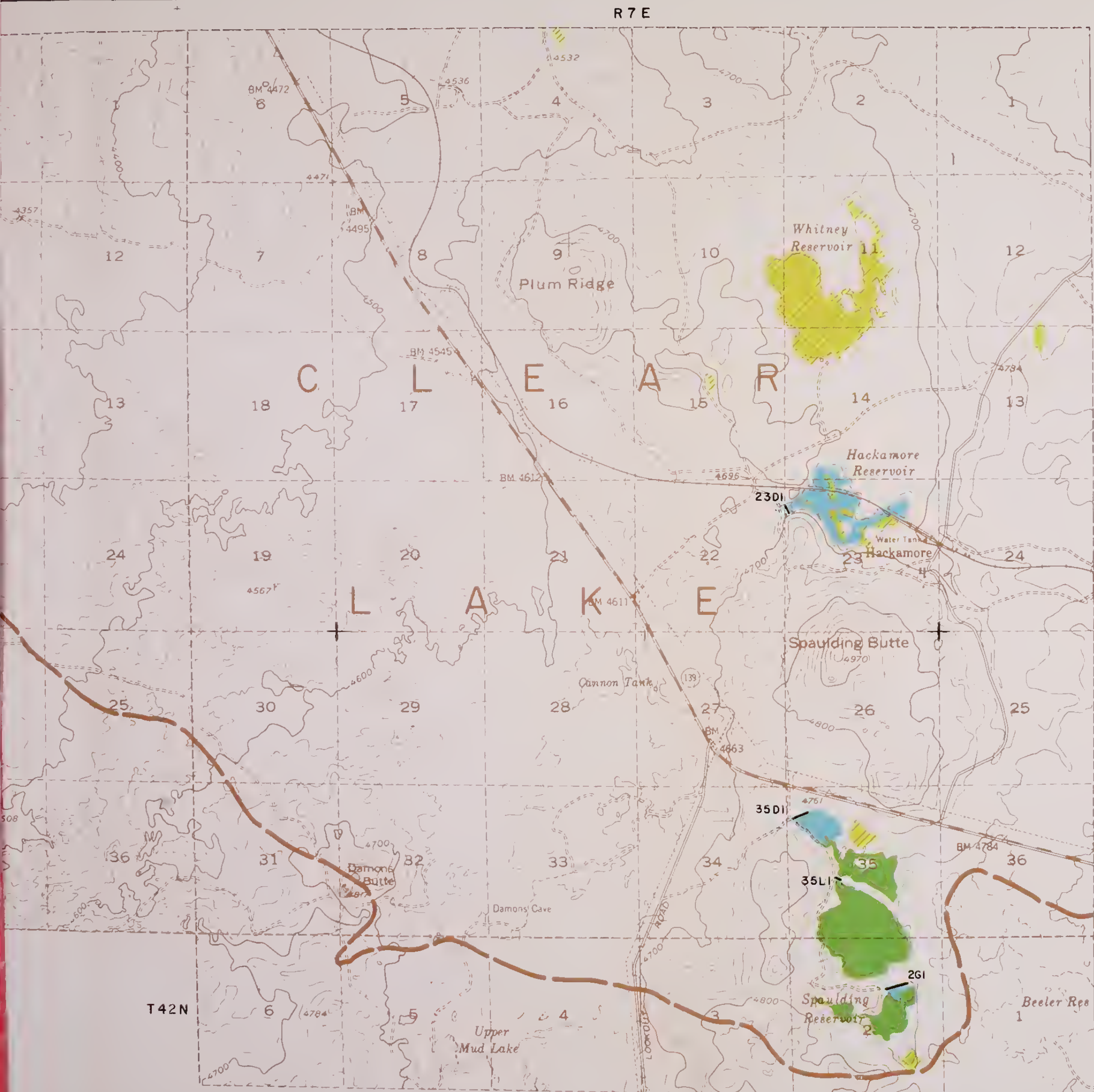
STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
NORTHERN BRANCH

LAND AND WATER USE
LOST RIVER BUTTE VALLEY
HYDROGRAPHIC UNIT

LAND AND WATER USE
AND
CLASSIFICATION OF RECREATIONAL LANDS
T 43 N, R 2-4E, MDBBM
1959

SCALE OF FEET
2100 0 2200 4000 6000





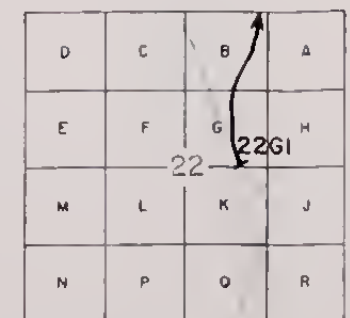
INDEX TO SHEETS



- GRAVITY DIVERSION
- PUMP DIVERSION
- DIVERSION CANAL OR DITCH
- NATURAL CHANNEL USED AS DITCH
- DIVERSION PIPE
- STREAM GAGING STATION
- HYDROGRAPHIC UNIT BOUNDARY
- SUBUNIT BOUNDARY

- LEGEND**
- LANDS RECEIVING FULL IRRIGATION
 - LANDS RECEIVING PARTIAL IRRIGATION
 - LANDS USUALLY IRRIGATED BUT IDLE OR FALLOW IN 1959
 - LANDS IRRIGATED BY GROUND WATER
 - LANDS IRRIGATED BY SURFACE AND GROUND WATER
 - MEADOWLANDS
 - MARSH LANDS
 - DRY-FARMED LANDS
 - URBAN LANDS
 - RECREATIONAL LANDS
 - POTENTIAL RECREATIONAL LANDS

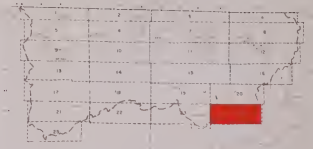
KEY TO NUMBERING SYSTEM



DIVERSIONS SHOWN ARE NUMBERED BY TOWNSHIP, RANGE AND SUBDIVISION OF SECTION, e.g. D-43N/2W-22GI

STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
NORTHERN BRANCH
LAND AND WATER USE
LOST RIVER BUTTE VALLEY
HYDROGRAPHIC UNIT
LAND AND WATER USE
AND
CLASSIFICATION OF RECREATIONAL LANDS
T 42-43N, R 5-7E, MDB & M
1959





INDEX TO SHEETS



LEGEND

- LANDS RECEIVING PARTIAL IRRIGATION
- LANDS USUALLY IRRIGATED BUT ONLY ON FALLOW IN 1959
- LANDS IRRIGATED BY SURFACE AND UNDER WATER
- WETLANDS
- MARSH, BAYS
- OPEN, FARMED LANDS
- URBAN LANDS
- RECREATIONAL LANDS
- POTENTIAL RECREATIONAL LANDS
- BRANCH DIVERSION
- PUMP DIVERSION
- DIVERSION CANAL OR DITCH
- NATURAL CHANNEL USED AS DITCH
- DIVERSION PIPE
- STREAM GAGING STATION
- HYDROGRAPHIC UNIT BOUNDARY
- SUBMIT BOUNDARY

KEY TO NUMBERING SYSTEM

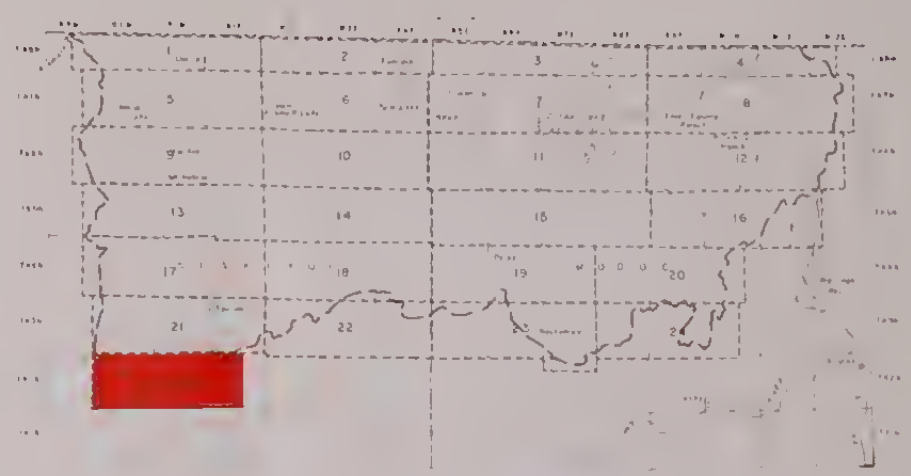
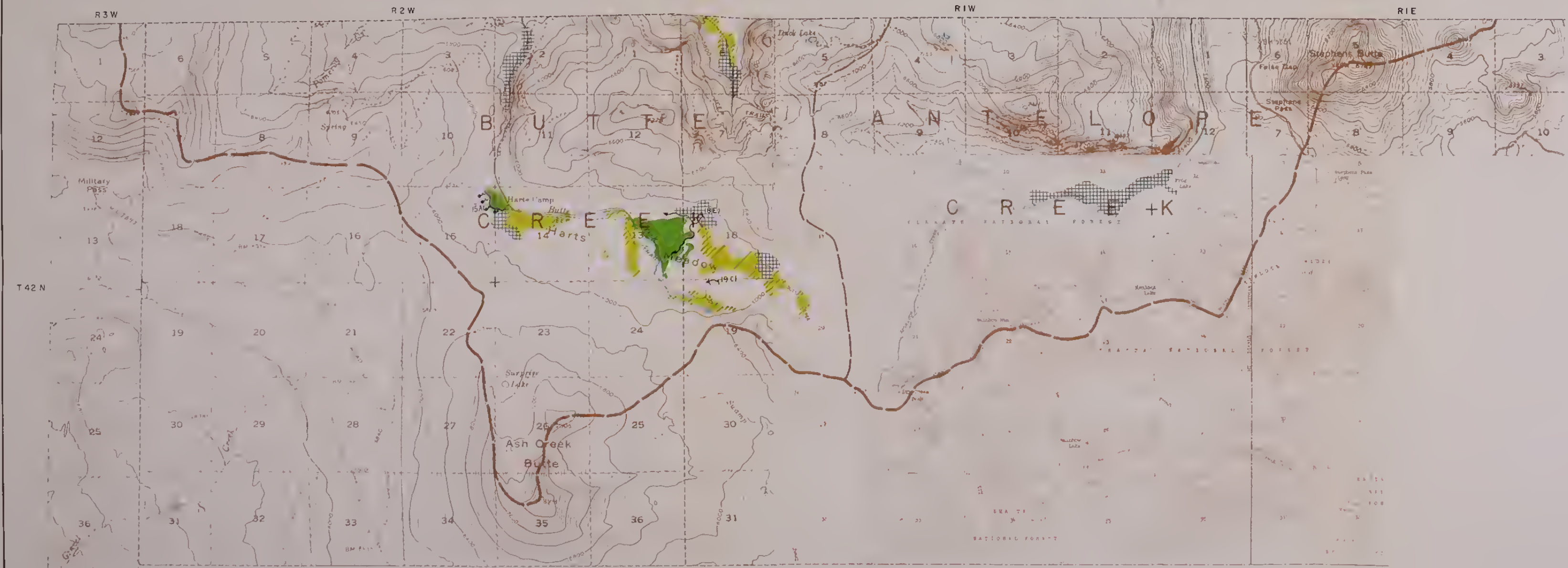


DIVERSIONS SHOWN ARE NUMBERED BY TOWNSHIP NAME AND SUBDIVISION OF SECTION AND SECTION NUMBER.

STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
NORTHERN BRANCH

LAND AND WATER USE
LOST RIVER BUTTE VALLEY
HYDROGRAPHIC UNIT
LAND AND WATER USE
AND
CLASSIFICATION OF RECREATIONAL LANDS
T 43 N, R 8-10 E, MODERN
1959

SCALE OF FEET
0 1000 2000 3000 4000

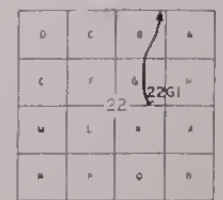


- GRAVITY DIVERSION
- PUMP DIVERSION
- DIVERSION CANAL OR DITCH
- NATURAL CHANNEL USED AS DITCH
- DIVERSION PIPE
- STREAM GAUGING STATION
- HYDROGRAPHIC UNIT BOUNDARY
- SUBMIT BOUNDARY

LEGEND

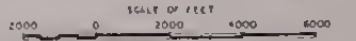
- LANDS RECEIVING FULL IRRIGATION
- LANDS RECEIVING PARTIAL IRRIGATION
- LANDS USUALLY IRRIGATED BUT DRY OR FALLOW IN 1959
- LANDS IRRIGATED BY SURFACE AND GROUND WATER
- MEADOWLANDS
- WATER LANDS
- DATE-FARMED LANDS
- UNBAM LANDS
- RECREATIONAL LANDS
- POTENTIAL RECREATIONAL LANDS

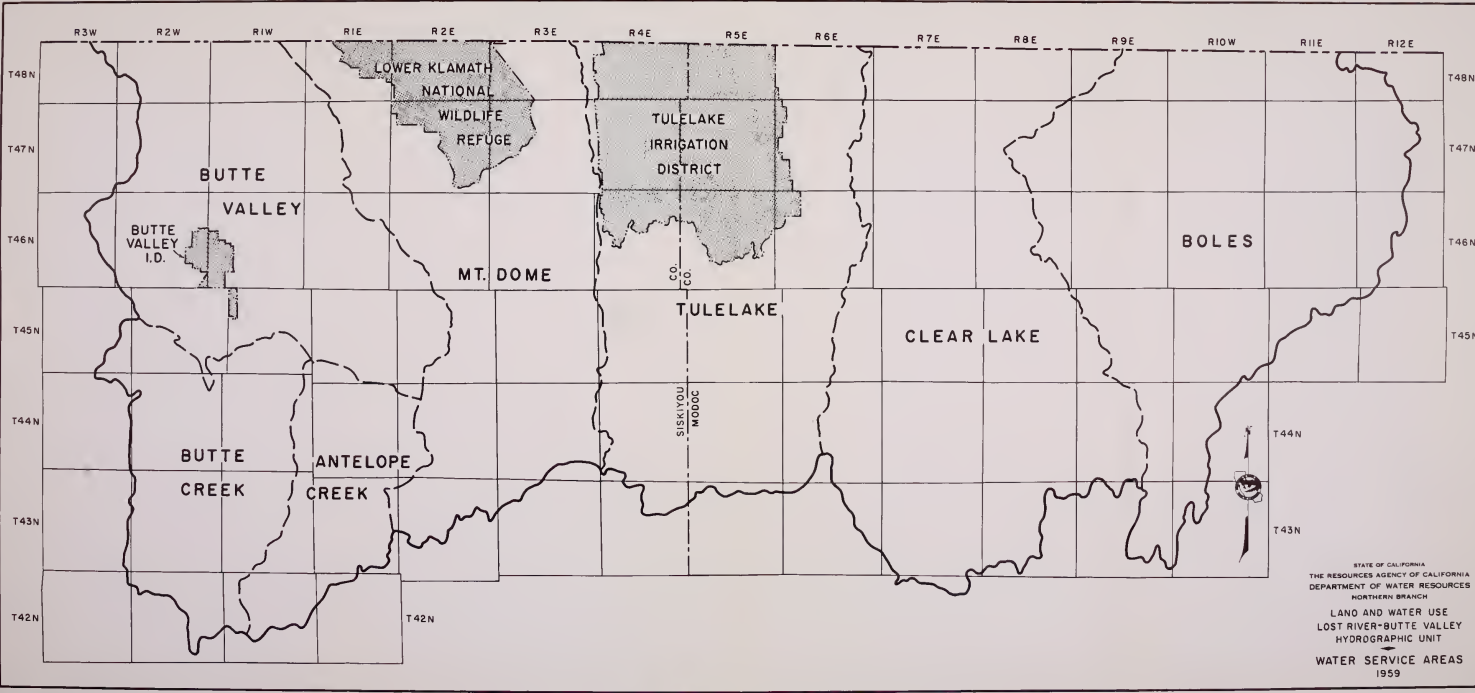
KEY TO NUMBERING SYSTEM



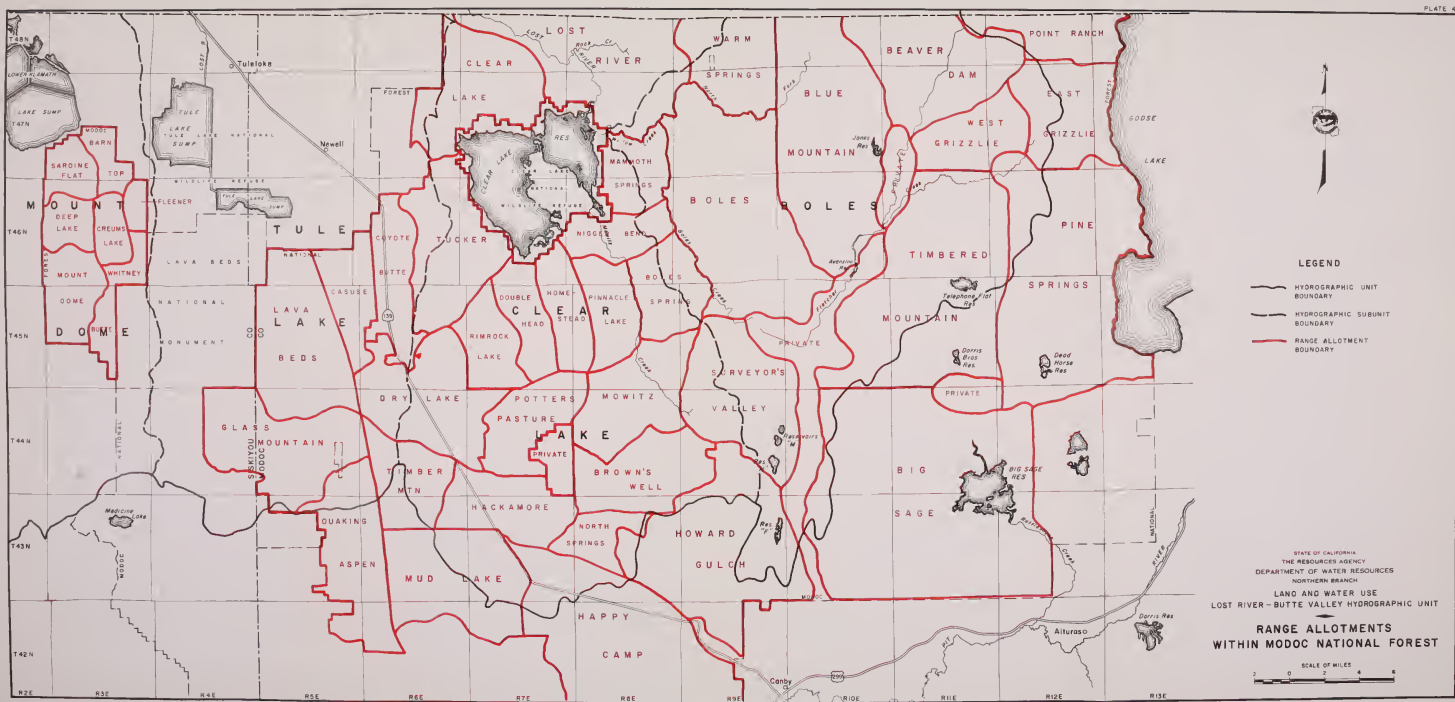
DIVERSIONS SHOWN ARE NUMBERED BY TOWNSHIP RANGE AND SUBDIVISION OF SECTION, e.g. D-43N/2W-22G1

STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
NORTHERN BRANCH
LAND AND WATER USE
LOST RIVER BUTTE VALLEY
HYDROGRAPHIC UNIT
LAND AND WATER USE
AND
CLASSIFICATION OF RECREATIONAL LANDS
T 42 N, R 3 W-1E, MDBBM
1959





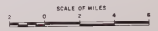
STATE OF CALIFORNIA
 THE RESOURCES AGENCY OF CALIFORNIA
 DEPARTMENT OF WATER RESOURCES
 NORTHERN BRANCH
 LAND AND WATER USE
 LOST RIVER-BUTTE VALLEY
 HYDROGRAPHIC UNIT
 WATER SERVICE AREAS
 1959

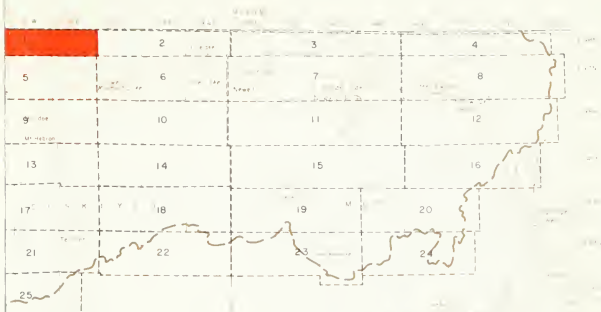


LEGEND

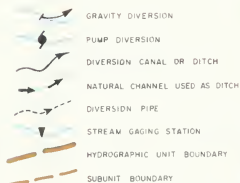
- HYDROGRAPHIC UNIT BOUNDARY
- HYDROGRAPHIC SUBUNIT BOUNDARY
- RANGE ALLOTMENT BOUNDARY

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
NORTHERN BRANCH
LAND AND WATER USE
LOST RIVER - BUTTE VALLEY HYDROGRAPHIC UNIT
**RANGE ALLOTMENTS
WITHIN MODOC NATIONAL FOREST**

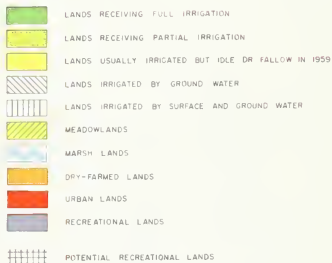




INDEX TO SHEETS



LEGEND



IRrigation SYSTEM



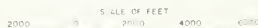
ARE NUMBERED BY
SUBDIVISION OF
22W-22GI

STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
NORTHERN BRANCH

LAND AND WATER USE
LOST RIVER BUTTE VALLEY
HYDROGRAPHIC UNIT

LAND AND WATER USE
AND
CLASSIFICATION OF RECREATIONAL LANDS

T 48 N, R 3 W-1E, MDB & M
1959





THIS BOOK IS DUE ON THE LAST DATE
STAMPED BELOW

RENEWED BOOKS ARE SUBJECT TO IMMEDIATE
RECALL

UCD LIBRARY

DUE SEP 29 1971

JUL 16 REC'D

JUL 16 1971

MAY 3 REC'D

MAY 3 REC'D

LIBRARY, UNIVERSITY OF CALIFORNIA, DAVIS

Book Slip-70m-9,65 (F7151s4)458

No 421084

California. Dept.
of Water Resources.
Bulletin.

PHYSICAL
SCIENCES
LIBRARY

TC824
C2
A2
no. 94:9

LIBRARY
UNIVERSITY OF CALIFORNIA
DAVIS



